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A Magazine of Western Ornithology

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THE CONDOR

A Magazine of Western Ornithology

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Issued *March 25, 1919*

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[Issued March 25, 1919]

NESTING NOTES ON THE ROCKY MOUNTAIN CREEPER

By W. C. BRADBURY

WITH FOUR PHOTOS

ON JUNE 21, 1917, accompanied by Robert Niedrach and Egmont Rett, and having arrived at the limit of vehicle transportation, in Gilpin County, Colorado, I started afoot to climb a steep, blazed trail up the mountain side for the open ground above timber-line. Our search was mainly to be directed toward the nests of the White-tailed Ptarmigan and Brown-capped Rosy Finch. The timber at the upper altitudes was dense, and the obscure trail could be followed only by the occasional "blazing" on trees, since long stretches were covered by deep snow drifts. This, together with the rarified air at an altitude of nearly 11,000 feet, made progress slow and difficult, and necessitated frequent stops for rest and to regain breath. During one of these pauses, about 200 feet below timber-line, we noticed a small bird that by its habit of diving from one tree to the base of another, we identified as a Rocky Mountain Creeper (*Certhia familiaris montana*). This bird was soon joined by its mate. After watching the pair for nearly a half-hour and having in mind a hard day's work yet ahead of us, Rett and I went on, leaving Niedrach to follow the birds until their nest was discovered or until they were lost. We had gone but a short distance, however, before being recalled by Niedrach's lusty signal, and found that he had located the nest by seeing one of the birds enter it.

The nest was about ten feet from the ground, on the side of a dead spruce sixty or eighty feet tall, from which most of the limbs and considerable of the bark were gone. It was placed between the trunk of the tree and a section of the bark that had warped away from its original position. As the nest was about six inches below the entrance, which was on one side of the section of bark, the most careful investigation was necessary to prevent endangering its contents, which proved to be three eggs. These were left undisturbed. (See fig. 12.)

On revisiting the nest, on June 24, it was found to contain seven eggs. It was next visited on June 26 and as the number of eggs had not been increased and as we had to depart for Denver the next day, these, together with the nest

and parent birds were collected. An examination of the birds showed that no additional eggs would have been laid.

One or both birds were present and remained nearby on each of the visits to the nest, and though quite tame and fearless evinced no special solicitude while it was being examined and finally taken. On the first and last visits it required an unusual amount of hammering on the tree trunk to cause the bird to vacate the nest.

The nest proper was placed on a foundation of small spruce twigs which had found lodgment or been placed behind the gaping section of bark where there were a number of small bunches of spiders' web. The nest itself was composed of fine, shredded, inner bark fiber and occasional flake-like chips of

Fig. 12. Nesting site of Rocky Mountain Creeper, near Alice, Colorado.

Fig. 13. Eggs and nest of Rocky Mountain Creeper.

the same material, with a few small fluffy feathers matted to the inside surface of the cup. (See fig. 14.)

The extreme dimensions of the nest, including foundation, are: Top to bottom, 7 inches; width, 5 inches. While the nest itself was 3 inches deep and 4 inches broad in one direction, the restrictions due to its location confined it to a breadth of 1½ inches in the other direction. In fact, so limited was the space that the bark itself comprised one side of the cup, the latter being 1½ by 2 inches at the rim and 1½ inches deep.

The eggs are white, sparsely dotted with rufous (Chapman's color chart) over the entire surface, more heavily marked with spots and dots of the same

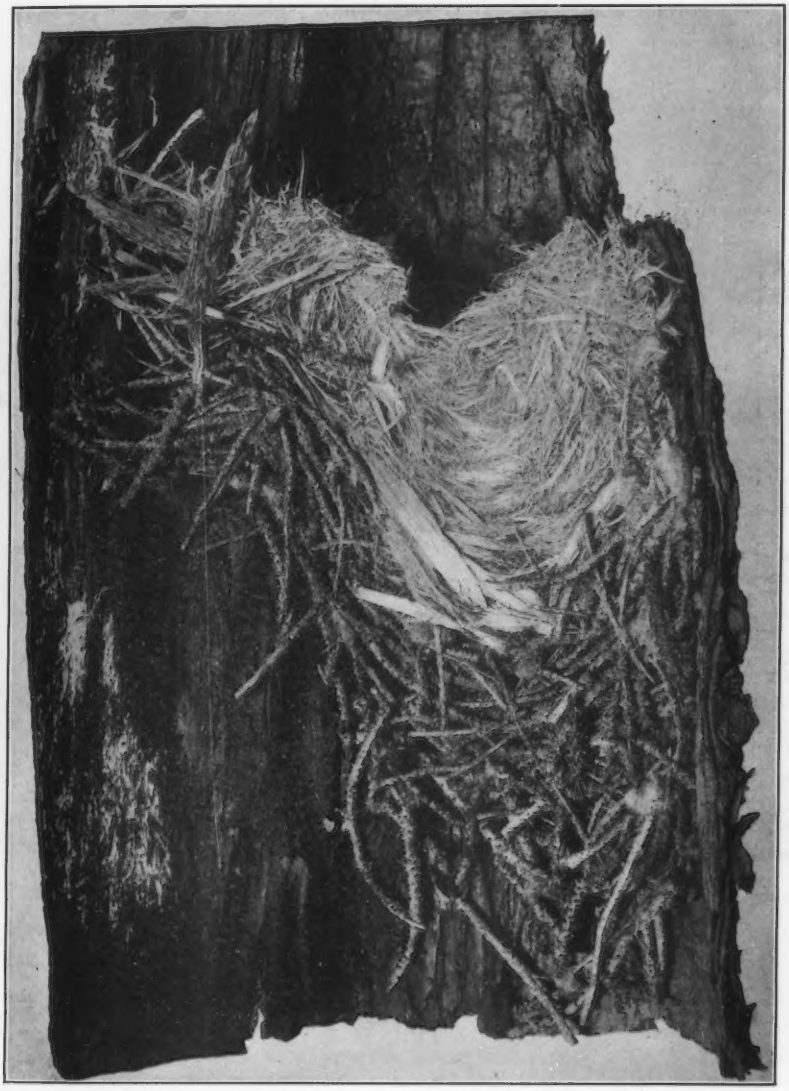

Fig. 14. NEST OF ROCKY MOUNTAIN CREEPER, AFTER REMOVAL FROM SITE BUT IN PLACE AGAINST BARK STRIP.

color at the larger end. The density of the spotting varies individually among the eggs. (See fig. 13.) The seven eggs show but very slight variation in size. The measurements average .52x.40 inches.

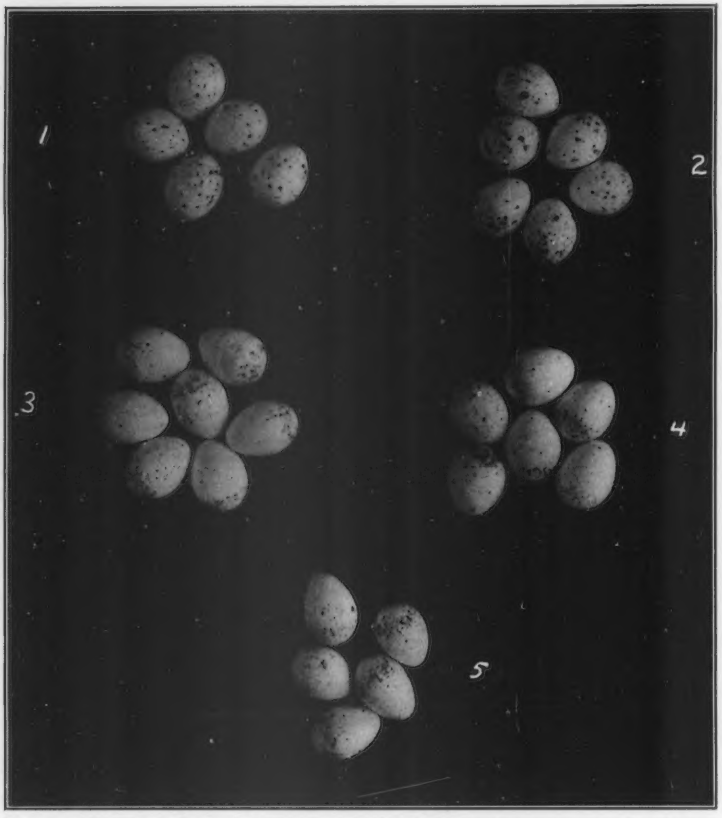

Fig. 15. SET NO. 1, BROWN CREEPER; NO. 2, MEXICAN CREEPER; NO. 3, ROCKY MOUNTAIN CREEPER; NO. 4, CALIFORNIA CREEPER; NO. 5, SIERRA CREEPER.

Photo by J. D. Figgins

So far as I am aware, this set is the first to be taken in Colorado and since it completes the genus as represented in our collection of eggs, I submit a photograph of the eggs of the five subspecies for comparison. (See fig. 15.)

Denver, Colorado, November 25, 1918.

ALBERT MILLS INGERSOLL—AN AUTOBIOGRAPHY

WITH PHOTO

THE UNDERSIGNED prefers to believe that his life history is of too little general interest to warrant appearance on the pages of THE CONDOR. But after the third urgent request from his esteemed friend, the Editor, the writer sets aside his own preferences and with due apologies submits the following autobiography.

I, Albert Mills Ingersoll, the third child of Dr. J. O. M. and Caroline E. Ingersoll, was born at Ithaca, New York, August 9, 1857. From hearsay, I learned that I came into this world a very frail baby and that my parents scarcely expected to raise me. At the age of eighteen months, I was picked up and tossed in the air by a playful physician, who exclaimed "this is the way to make weak babies grow". Unfortunately, he didn't realize that he was performing the act in a room having a rather low ceiling, and the result was an unconscious child. I struck the ceiling midway between two joists, the flexible laths taking up some of the shock. My little head made a dent in the plaster that was easily discernible in later years when pointed out to me.

The worst accident that happened to me, occurred in 1868. Slipping on an ice-covered gate my head was thrown violently against a post. Somewhat dazed, but scarcely realizing how seriously injured I was, I rose up and started toward school, fainted, and was carried home, never again to enter a schoolhouse as a pupil. This blow, occurring at the age of eleven, had a far-reaching effect on the future course of my life and was the indirect cause of my having ample time to engage in natural history pursuits. Dimness of vision increased gradually until it was impossible for me to distinguish men from women at a distance of one hundred feet. My mother took me to consult the famous oculist, Dr. Agnew, of New York City. His diagnosis of my affliction was passive congestion of the optic nerve. He advised that I refrain from reading or resuming my studies under a year and warned me that I would court blindness by straining my eyes while in their present condition. I was told that by living an out-of-door life and taking suitable medicines to build up my impaired health it was reasonable to expect the eye trouble would pass away by the time I was of age.

After weary months of suffering my eyes became as keen of sight as formerly, but they never recovered from certain muscular troubles; and to this day reading and writing is so trying that they effect my general health if carried on for more than an hour or so. On many days, I can only skim over the daily papers.

Hampered by poor health in addition to this serious eye trouble, I experienced difficulty in choosing an occupation, realizing the necessity of selecting a business requiring of me but a minimum amount of clerical work. Always extravagantly fond of flowers and candy, I fancied I could succeed in making a living in either the florist or confectionary business. As time rolled on, the craving for sweets appealed to me stronger than the love for flowers; so, concentrating on a purpose, I decided to move to San Diego and engage in the candy and ice cream business.

On September 22, 1888, "Ingersoll's Palace of Sweets" opened its doors to the public. That memorable event occurred during my thirty-first year of life,

and I had never worked for anybody or had business experience of my own. Nevertheless my success was such as to prove a surprise to other San Diego confectioners who had said I would "go broke" before many months. The venture was highly satisfactory in every way. Prospering from the beginning, and getting in the lead, I was able to retire at the end of eighteen years. On

Fig. 16. ALBERT MILLS INGERSOLL.

selling out, a larger price was obtained for the goodwill, and right to continue business under my name, than for the entire stock of goods and fixtures combined.

Recalling some of my boyhood experiences to mind, I distinctly remember that the first eggs I took were robin's. Imagining eggs of such a beautiful blue would be more palatable than plain colored hen's eggs, and wishing some

good "eats", I dropped them into a teakettle to boil. The rapid ebullition burst the shells and liberated two disgusting embryos. These, on being poured into a pan by a servant, caused her to exclaim, "Mrs. Ingersoll! Mrs. Ingersoll! come out to the kitchen and see the horrid bugs I found in the hot water". The sight of those big-eyed objects was not at all appetizing, and a gentle lecture from my mother was intended to teach me the error of robbing birds of their treasures.

Generally taking up whatever fad was in vogue among my boy associates, various objects were collected in a desultory way during my youthful days. Recital of incidents in connection with some of them may not be out of place. My interest in postage stamps and coins was squelched by a few words from Prof. George Latura Smith. As near as I can recollect, he said, "But why waste time by giving attention to such inanimate things when nature offers so much of greater interest? Anyone can purchase old stamps and coins, but money won't buy the pleasure and satisfaction to be gained in the study, collecting and preparation of specimens of living things." Beginning to realize that I was on the wrong track, a quick decision switched off two of my hobbies. My album of stamps was traded to a gentleman connected with the Ithaca glass works for a rowboat and for sheets of glass especially bent to magnify objects in an aquarium for aquatic plants and insects.

My entomological efforts had heretofore lain in the accumulation of showy butterflies and moths, taken principally through a selfish desire to outdo the other boys. Seeing my error, I resolved to learn everything possible in regard to the lives of these beautiful creations of nature, and also of insects in general. Various insects were successfully raised in breeding cages provided with earth or water for the growing of plants suitable for the larvae of the various species to live on. Prying into the habits of some nocturnal insects necessitated night work, but as these investigations were carried on previous to the era of electric lights, I found the gaining of knowledge by aid of a dark lantern and oil lamp too injurious to my eyes to be continued. My enthusiasm in this wonderfully interesting study had been aroused to a degree that made the mere collecting of specimens impracticable. Circumstances, as indicated, turned my attention to larger objects.

Capturing a ferocious coon at a despoiled wood duck's nest, I decided he should form the nucleus of a menagerie that had been in contemplation since the latest visit of "the largest show on earth". Several Ithaca boys started menageries during that particular period, and rivalry amongst us was at a high pitch, when Velvet, my seven-toed cat, "did her bit" by furnishing a greater attraction than any of my competitors could boast of. By drowning, her numerous litters of kittens were invariably reduced to two. On one occasion, after half of her day-old kittens had been fed to my captive great horned owls, I chanced to find a red squirrel's nest with young as small as mice, with hairless tails and unopened eyes. They were the homeliest animals imaginable. The mother was shot, and wishing to raise two of the young ones to maturity, they were taken home and substituted for Velvet's destroyed kittens. The cat resented the imposition at first; but on being shown the dead mother, she seemed to sense that it was her duty to foster the orphans. From then on, she was as solicitous for their comfort as for that of her own kittens. Later, on taking a squirrel and kitten away from her and placing them on the floor, Velvet jumped out, caught the squirrel by its neck, and carried it to her bas-

ket; her own kitten was then taken home in the same manner. This annoying act of mine was repeated frequently in the presence of visitors to show to them the cat's apparent affection and greater care for the orphan.

An acquaintance caused an article to appear in a local newspaper calling attention to "Bert Ingersoll's Zoo". Curiosity brought many people to see my squirrels and kittens feeding at the same "lunch counter". My lovable old cat once surprised me by retrieving, uninjured, a small garter snake that had escaped to a neighbor's garden while being transferred to a new reptile cage.

The rearing of some young screech owls, captured as they were about strong enough to leave a snug hollow in an elm, proved amusing in several ways. One, in reddish phase of plumage, was a favorite and entertained us by taking from the hand large angleworms as offered, swallowing them alive. Closing beak and eyes, the bird would simulate sleep and remain motionless. In the course of forty or fifty seconds the struggling worms would slowly emerge from between the mandibles, slip out an inch or two, and swing loosely around in space until feathers were touched. Violent efforts to escape in their direction always roused the owl to action. Reswallowing these squirming tidbits, she would assume her previous attitude and be ready for a repetition of the performance. It was such a nauseating sight that one spectator said she could hardly keep her own mouth closed! Angleworms seeming to be a favorite food of this screech owl, it is reasonable to suppose that it was an enjoyable sensation to have its palate tickled by them.

My adult screech owl would not eat raw or cooked vegetable matter in any form; but the two immature birds reared by me would eagerly swallow young leaves and tender shoots of certain plants. A preference was shown for those of the grapevine. Later, advanced growth making the grape unacceptable to them, and having difficulty in finding a palatable substitute that would be eaten from my hand, I placed an assortment of green stuff in their cage, that the kind needed might be selected during the night and eaten by them. As my pets gradually lost their craving for this line of food, and stopped eating it altogether after being in captivity a month or two, I am inclined to believe screech owls require a mixed diet of animal and vegetable matter during an early period of life.

The reading of Samuels' "Birds of New England and Adjacent States", a treasured 1871 Christmas gift, had much to do in awakening my interest in ornithology and oology. Starting a collection of bird skins with an albino robin, accidentally killed by coming in contact with a baseball, did not lead to the taking of albinos only. Birds' eggs were first taken without nests and kept, a pair of a kind, in a spool cabinet. I had never seen a well arranged or large collection of eggs. But observing, after a little field work, that eggs looked more attractive in original nests than in a sawdust-lined drawer or box, I decided that my collection should have one nest, with complete set of eggs displayed in it, of every obtainable species, and also a set of each species of eggs to be kept by itself. This resolution was made in 1875. In June of that year I collected a nest and four eggs of the Vesper Sparrow at Ithaca, New York. This initial set is still in my collection, and owing to painstaking care, this and all my earlier collected specimens are now in as fine a state of preservation as when first placed in my cabinets.

My field work has mainly been carried on in twenty-four counties of Cali-

fornia; but the birds of New York, Illinois, Florida, Arizona and Idaho have also received visits from me. Favorable opportunities enabled me to add to my collection of nests and eggs a larger proportion of personally taken species and subspecies than is commonly the privilege of an oologist. A set of Spotted Owl, *taken in San Diego County, March 24, 1884, is the most highly prized of any set in my collection. Most oologists, however, might consider as of greater value my Condor egg or either one of the following nests accompanied by beautifully marked sets of eggs: Everglade Kite, Golden Eagle, Farallon Rail. My* collection of bird skins, nests and eggs is willed to the *California Museum of* Vertebrate Zoology.

The most important capture of my life, is Mrs. Ingersoll, formerly Miss Laura I. Stevens, of Sacramento, California.

ALBERT MILLS INGERSOLL.

San Diego, California, January 18, 1919.

NOTES ON THE BREEDING HABITS OF THE RED CROSSBILL IN THE OKANAGAN VALLEY, BRITISH COLUMBIA

By J. A. MUNRO

THE FOLLOWING notes apply chiefly to a small section of timbered country close to Okanagan Landing, its topography being the familiar Okanagan type of low mountain covered with Douglas fir and yellow pine, including both original forest and second growth.

Red Crossbills (*Loxia curvirostra minor*) were present in unusually large numbers during the year 1918, and in order to compare their relative abundance with other years, a synopsis of my field notes, taken since 1911, is included.

These birds were fairly common on December 14, 1911, in yellow pine country near Okanagan Landing. A series of males collected on this date had the sex organs enlarged, but no mated birds were seen. It is probable that these birds remained until the following spring, but as no special interest was taken in them at the time, no attempt was made to keep a record of their movement as was done in subsequent years. The only record for 1912 was made on March 13, when a flock of fifteen birds was seen at Nahun, fifteen miles south of Okanagan Landing on the west side of the lake. A small flock was seen several times in the same district at an altitude of 4000 feet during the first week of December, 1913.

No other records were made until July 21, 1915, when a small flock was seen at Okanagan Landing, probably their first appearance for that year. As this locality was being carefully worked at the time it is unlikely that they would have escaped observation, had they arrived before this. A female taken on August 5, and another taken on August 18, had the worn abdominal patch of breeding birds and a third female in breeding condition, was taken on February 24, 1916. This small flock was seen at intervals until April 20, 1916, which was the last date on which Crossbills were observed until the big year 1918, when they were first noted on January 9. They were seen daily there-

after in gradually increased numbers until the maximum was reached about February 15, when there were at least six hundred birds inhabiting an area of approximately three square miles.

At this time when bird-life was relatively scarce it was possible to devote much of my leisure to their study. There had been a heavy crop of yellow pine and Douglas fir seeds (these are the only conifers in this area) and possibly this might account for their unusual abundance and their long stay.

During the cold weather of January and the early part of February, before there was any sign of mating, the birds remained in flocks of from ten to thirty in the heavily foliaged conifers. As they were usually silent they would often have escaped notice had it not been for the presence of the winged seeds scattered broadcast on the snow, each with the kernel neatly cut out, and for various methods used for exciting the birds. An imitation of the Pygmy Owl call brought them at once and they would circle over the tree tops in their eagerness to locate their enemy. When the sound was located they would fly from tree top to tree top near the source of the sound, uttering their sharp alarm note until the calling ceased, when they would disappear into the forest again.

Dissection of a series of males collected on February 19, showed the sex organs to be in various stages of development from 1 mm. to 5 mm. in length. Males in the red, the yellow, and the mixed red and yellow plumages, were found to be in breeding condition, and others in similar plumage shot on the same day were undeveloped sexually, or nearly so. No evidence as to the age of the birds could be deduced from the sex organs then, nor did comparison of the skull granulation help.

While a discussion of moults will not be attempted in this paper it might be of interest to state that specimens were taken which plainly show a reversion to the yellow plumage from the red.

The first mated birds and the first nuptial flight were seen on February 19. Four or five birds at a time were frequently seen after this, chasing one another in circles around the tree tops and singing on the wing. Their song came as a delightful surprise in the silent snow-clad woods. Heard through a medium of clear frosty winter air, the song seemed to have the same fine quality as that of the Townsend Solitaire; a less sustained effort and lighter in tone, but with equal carrying power. As the mating season progressed, the song gained in volume and quality, until, by the end of March, it was common to hear the birds sing for twenty minutes at a time, I decided that it was the equal, in every way, of that of the solitaire, with all of the volume and sweetness of the latter's song.

In March, the courtship period being over, there was none of the chasing and singing on the wing observed in February. Solitary males sang from the topmost twig of the tallest tree, frequently a solitary yellow pine towering above the second growth firs. Often three or four birds could be heard at once —a most delightful chorus. In singing the bill is pointed straight up, chest expanded and breast, head, and flank feathers puffed out until the singer looks much larger than he really is. In the early morning the birds sang continuously, evidently serenading their sitting mates, and the song could be clearly heard on a still day at two hundred yards.

In searching for nests, it was soon found that the Pygmy Owl call would be of no service as the males would come from any distance, up to a quarter

of a mile, and in the heavy timber it was impossible to follow them with the eye on their return journey. The only methods that proved successful were to find a singing male and use the tree he perched in as a base, or else to walk slowly through the woods watching for birds carrying nesting material.

Several good prospects were located by these methods, but they were in trees that were impossible to climb. An abortive attempt at nest building was observed on March 1. This was on the top of a ridge overlooking Okanagan Lake where there were a number of second growth firs in small groups. In this case, a red male was seen at the top of a thirty-foot heavily foliaged fir, and as I approached he gave the characteristic alarm note, but did not fly. After waiting in concealment for five minutes, a female was seen to fly out from a dense piece of foliage ten feet below the top and disappear in the timber on the hillside. In a few minutes she returned with some nesting material in her bill which she carried to the top of another tree and there dropped. She repeated this a second time and then both birds flew off and did not return during the hour that I remained on the watch.

On March 19, while hunting on the same ridge, a nest in process of construction was found, about one hundred yards distant, and I concluded that its owners were the same pair as had been under observation some two weeks earlier. The nest was saddled on a thin branch near the top of a forty foot Douglas fir about fourteen inches from the trunk and was so well concealed as to be all but invisible from below. The female was under observation for half an hour, while she carried material to the nest, moulding the interior with her body after each trip, while her mate remained at the top of a nearby tree chirping excitedly.

Absence from the district prevented my return to the nest until April 9 and it then contained a newly hatched chick, and two eggs on the point of hatching. The ground color of the eggs was pale bluish green lightly flecked with lavender and with a wreath of lavender and ruddy-brown spots around the larger end. No measurements of the eggs were taken and unfortunately I was not successful in preparing them. The nest which is a very handsome one was presented to the Provincial Museum at Victoria. The body of the nest is composed of black tree moss (*Alectoria jubata*), dry grass and weed stalks; the outside, of fine fir twigs, those selected for the rim being decorated with little tufts of vivid green lichen (*Evernia vulpina*). The inside is well felted with black tree moss and contains a few pieces of fine grass and one breast feather of a Red-tailed Hawk. It is 110 mm. in diameter with an outside depth of 60 mm. and an inside depth of 30 mm.

On March 18, a red male was heard singing from the top of a second growth fir thirty feet high, one of a group on a steep hillside overlooking Okanagan Lake. At my approach he called excitedly until I reached the tree, when he flew some distance away. The nest was in the tree on which the male had been singing and was found without difficulty. It was on a lower branch ten feet above the ground and ten feet out from the trunk, in plain view from the ground. The female was sitting on one egg and did not leave the nest until the limb was shaken as I ascended the tree.

Two more eggs were laid by March 20, and, rather than risk having them destroyed by a squirrel or a Magpie, I collected the nest and the female. On dissecting the bird a fourth egg, too much crushed to preserve, was found in the oviduct. The eggs measure, in millimeters, 15x20, 15x20, 14x19, and are

a pale bluish green sparingly marked with dark brown spots (some of which are smeared) and with small lavender markings principally at the larger ends.

Another nest containing four young a few days old was found on March 18. This was in a tall rugged fir growing on the edge of a rocky bluff. The nest was situated eight feet from the trunk on a stout limb forty feet above the ground and was quite invisible from below. While hunting carefully over this hillside, stopping frequently for ten-minute intervals to watch for crossbills, the very quiet female flew into a tree a few yards from me and after a wait of five minutes flew directly to the nest. The young were naked save for small patches of filamentous gray down on the head and back. The bill and gape were conspicuously yellow. One of these nestlings was taken and an examination of the stomach showed a mass of softened fir seeds.

With the rush of migrants in the latter part of April and May, my interest in crossbills rather flagged, although it was noted that most of the birds were paired and very quiet. On June 14, small flocks appeared in the fringe of poplars along the lake shore in front of my house. This piece of brush is under almost daily observation and no crossbills had ever been seen there before. They were feeding on green choke-cherries and tiny salmon-colored lepidopterous larvae that crawled on the under sides of the poplar leaves. To reach these the birds hang head downward in the position they often assume when extracting fir seeds from the cones.

All day long small flocks were flying up and down the road and alighting in the trees. It is likely that they were moving to new feeding grounds as none were seen the next morning or during the days following. Probably sixty birds were seen during the day. Of these at least forty were red males in the moult and the rest were adult females and juvenals in the striped plumage.

Okanagan Landing, British Columbia, January 21, 1919.

NOTES ON THE NESTING OF TWO LITTLE-KNOWN SPECIES OF PETREL

By GEORGE WILLETT

WHILE stationed on Laysan Island, Hawaiian Archipelago, during the winter of 1912-13, I was much interested in observing the nesting habits of two species of petrel, *Pterodroma hypoleuca* and *Oceanodroma tristrami*. As I have never seen a published description of the nest and eggs of either of these birds, the following notes may be worth recording.

The White-breasted Petrel (*Pterodroma hypoleuca*) is an abundant nesting bird on Laysan, Lisianski and Midway islands, Pearl and Hermes Reef, and French Frigate Shoal. It is the most abundant nesting bird on the Hawaiian Bird Reservation, there being on Laysan Island alone, probably not less than 50,000 pairs. It was already present on the island at the time of our arrival, December 22, 1912, and from this time until January 7 following, the air at night fairly swarmed with the birds. After this date, while still abundant, the numbers in the air decreased considerably as the birds began to incubate their eggs. Laying commenced the first week in January and was at its height about January 20.

The nesting burrows of this petrel were in sandy soil in nearly all the drier parts of the island. They were generally from six to ten inches in diameter at the mouth, and seven or eight feet in length; it is very probable that part of this extensive excavation is done by the Wedge-tailed Shearwater (*Puffinus cuneatus*), as these birds are known to use the same burrows later in the season. The shallow nest cavity at the end of the burrow is generally fairly well lined with grass and leaves. An exceptional nesting site of the species was noted on January 25, when a nest and egg were found under an overturned basket near the cabin. The single egg is pure white, unmarked. Six typical eggs measure (in inches) as follows: Largest, 1.98x1.45; smallest, 1.85x1.42; average, 1.91x1.44.

Heavy sandstorms during early February filled up several thousand burrows of this species, smothering many of the incubating birds. While walking among the colonies at this time, birds were frequently found imprisoned in sand at the mouths of burrows, often with their heads above the surface and still alive.

The Sooty Petrel (*Oceanodroma tristrami*) at the time of our visit to the islands, was considered one of the rarest of the petrels, being known from a very few specimens. We were therefore much pleased to find a substantial breeding colony on Laysan Island, also a smaller one on Pearl and Hermes Reef. A series of the birds was secured and, as little has been previously published regarding the species, the measurements obtained may be worthy of record. It will be noted that the females are appreciably larger than the males, in most instances this being clearly perceptible in living birds.

The average measurements (in inches) of six breeding males follow. Length, 9.98; wing, 7.09; tail, 4.07. The largest measures: Length, 10.20; wing, 7.25; tail, 4.27. The smallest: Length, 9.40; wing, 6.68; tail, 3.77. Six breeding females average: Length, 10.39; wing, 7.43; tail, 4.33. The largest measures: Length, 10.92; wing, 7.61; tail, 4.58. The smallest: Length, 10.15, wing, 7.32; tail, 4.25.

The nesting colony of the Sooty Petrel on Laysan Island was situated along the shores of the shallow salt-water lagoon that lies approximately in the center of the island. A rise in the water of this lagoon, caused by heavy rainfall February 6, flooded and destroyed several hundred of the petrels' nests, as well as numerous nests of the Laysan Albatross (*Diomedea immutabilis*). One of the sand storms previously mentioned, coming two days later, also destroyed many nests by filling the burrows with sand. Probably at least half of the petrel colony was wiped out by these two catastrophes.

The burrows of the Sooty Petrel were much smaller than those of the White-breasted, averaging about five inches in diameter and from two and one-half to three and one-half feet in length. In most instances they were quite crooked, resembling in this respect nesting burrows of *Oceanodroma leucorhoa* or *O. furcata*. The nest at the end of the burrow was composed of rootlets, weedstems and leaves. The eggs, deposited mostly during the first two weeks in January, are typical of the genus *Oceanodroma*, though, of course, larger than those of any of the genus along our Pacific coast, being approached in size only by those of *O. macrodactyla*, of Guadalupe Island. They are creamy white in color, more or less faintly dotted, scrawled or wreathed, with purplish and pinkish brown, mostly around the larger end. Average measurements (in inches) of six eggs are: 1.52x1.07; largest, 1.63x1.08; smallest, 1.48x1.07.

Los Angeles, California, December 6, 1918.

BIRD NOTES OF A STORMY MAY IN COLORADO SPRINGS

By EDWARD R. WARREN

WITH ONE PHOTO

THE MONTH of May, 1917, in Colorado Springs, was, apparently in common with the rest of the country, an abnormally cold, stormy one. Many cloudy or partly cloudy days, with low temperatures and much rain and even snow, prevailed all through the month. Once the maximum temperature was above 80—81, on the 16th. On the 15th, 17th and 18th the maximums were 77, 76 and 76, respectively. On no other day did the thermometer go above 70. The lowest minimum was 22, the highest 51, the latter on the 18th.

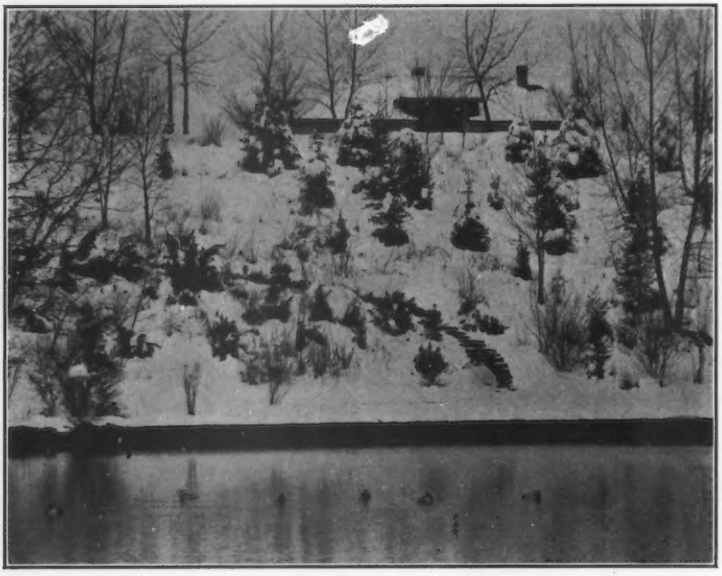

Fig. 17. SCENE IN MONUMENT VALLEY PARK, COLORADO SPRINGS, MAY 5, 1917. LESSER SCAUP DUCKS IN FOREGROUND.

I had not been devoting as much time as usual in April to bird work; but when, on the morning of May 5, I woke up and found some eight inches of heavy wet snow on the ground, I decided it was time to see what was going on among the birds. I knew this storm, coming at the migrating season, might cause suffering, and there was a possibility it might also make delay in the arrival of some of the species. About my house the most noticeable thing was the great number of Robins, these searching for worms wherever they might luckily find a bare spot. The snow was so saturated with water that it melted readily, and the plight of our red-breasted friends was thus not as bad as it might have been, though many of them evidently thought it bad enough, as

they perched in the snow-laden trees with their plumage fluffed out to its fullest extent trying to keep warm.

It was the middle of the forenoon before I could leave home to visit the Monument Valley Park a short distance away. By this time the roadways were getting bare, and were surfaced with mud and water, though our gravelly soil does not usually make much mud. On my way to the park in these roadways I found Meadowlarks, and Vesper, Lark and Chipping Sparrows (the western form of each, of course) busily seeking food, and evidently finding it, judging from their actions. Arriving at the park I found an expanse of white; none of the paths had been broken, and few or no foot passengers had been along. Brewer Blackbirds were about, White-crowned Sparrows were perched in trees and bushes; they did not appear to care about going out to rustle in the bare roadways.

It was about a small pond that there was the greatest amount of life. On the water were seven Lesser Scaups, and they were quite unconcerned, feeding or swimming about or preening themselves as they chose. A little later in the morning I also saw Gadwalls, Shovelers and Baldpates; altogether there were some twenty odd ducks on the pond at one time. Along the shores of the pond Say Phoebes were abundant, continually flying out over the water after insects, though one would have thought it a mighty poor day for flycatching. Myrtle Warblers were also common and emulating the efforts of the Phoebes, though also working the bushes and ground along the shore. A Kingfisher was also there, occasionally dropping into the water with a splash. For such a wintry scene, bird life was decidedly abundant and active. Besides the Myrtles a few Orange-crowned and Audubon Warblers were present, the former confining their activities to the trunks and branches of the trees which they were carefully working. I ought to state that it is really very unusual for Myrtle Warblers to be so abundant here. I have never before seen as many as on this occasion, and usually the seasons slip by without any being noted. A Western Yellowthroat was also on the warbler list.

A little way from the pond, and on the bench above it, is a reservoir belonging to the park. On this were four Lesser Scaups and eight Wilson Phalaropes, and along the shores were more Say Phoebes and Myrtle Warblers; while flying about over the water were several Rough-winged and Barn Swallows, which looked rather unseasonable; for there was a cold north wind with flying snow. I traversed a fair portion of the park that morning, and in the afternoon walked the whole length of it, some two miles. One bird which was noticeable was the Townsend Solitaire, of which I saw several, though it is usually rare in the park. I subsequently saw one or more on my almost daily visits until the 17th of May.

The beautiful Mountain Bluebirds were present in flocks. It is possible these spring storms bring more suffering to this species than to almost any other, they seeming to have much difficulty in obtaining food when snow is on the ground.

The following day was cloudy and bird conditions much the same, though the snow had largely melted. Snow was falling and melting almost all the day of the 8th, and birds were working hard for food. Another little flock of Phalaropes was at the reservoir and a flock of Chestnut-backed Bluebirds was in the park in addition to the other species. The latter were also seen the next day which opened with an inch of snow on the ground and was cloudy most of the time.

On every one of these days a little flock of Lesser Scaups was on the pond, apparently the same birds, as there were five males and two or three females. These birds were quite tame, that is, they paid little attention to anyone, and fed and swam about unconcernedly. The occasional Gadwalls and Spoonbills were much shyer and disliked having people about, often leaving when passersby approached. The morning of the 10th I found three Wilson Phalaropes on the pond with the ducks. They were apparently feeding on insects flying close to the surface of the water, as the birds swam about with heads up and bills open, making darts here and there as if catching something. I did not see one take anything from the surface during the considerable time I watched. Though they kept quite well out from the shore most of the time, it did not appear to be from fear, as they occasionally came boldly quite close to where I was. A female Black-crowned Night Heron was seen then and was noted off and on for several days, usually about one particular grove of cottonwoods. To my great surprise I saw a male Evening Grosbeak, usually only a winter visitant, and an irregular one at that; I saw none the preceding winter, nor did I hear of any about town.

The following day, the 11th, the first Black-headed Grosbeaks and House Wrens were seen, the latter about a nesting site which has been used for several years. The Grosbeaks were about on time, but the Wrens were a trifle late; I think they commonly arrive from three to six days earlier than this. From this date on for a week or more the weather improved somewhat until the little hot spell from the 15th to the 18th was past; then more bad weather set in, lasting until the end of the month.

On the 13th the first Green-tailed Towhees and Yellow Warblers were noted. The former should have been here by May 1 and the latter by the 7th. This day was also somewhat notable as being the first when the Scaups were not on the pond, nor were they seen again, though Gadwalls were noted on the 15th. On the 14th Clay-colored and Brewer Sparrows were about in considerable numbers. An Arkansas Kingbird was seen. I had thought possibly I saw one on the 5th; if I did, the bird thought it wiser to go south again. The present date is just a bit late. The first Catbird was also seen, the date being about normal.

No Say Phoebes were seen about the park after the 9th. As soon as the weather had moderated so that they could obtain food almost anywhere they evidently scattered to their usual haunts. On the 15th the first Kingbird was observed, like the Arkansas, a bit late. The first Bullock Oriole, about five days late. A Red-headed Woodpecker was seen on the 17th, somewhere about the normal date for the species.

When we come to analyze the above data it would appear that six species, namely, Kingbird, Arkansas Kingbird, Bullock Oriole, Green-tailed Towhee, Yellow Warbler and House Wren, were all late in arriving, with the possible exception of the Arkansas Kingbird, while the Red-headed Woodpecker and Catbird came about on time; but their normal arrival dates being toward the middle of the month they would not be as apt to be affected by the storm. These delayed species may have met the storm and cold weather to the south of here and waited, and then come on when the conditions improved, which was the case when they finally did come. Observations over a larger territory in the region would have been better, for there are several species of birds which visit the park only occasionally and usually not on their first arrival, but straggle there later.

Aside from the migrations, the most interesting observations, I think, were on the Say Phoebes, which stayed about feeding on insects over the surface of the water, and then disappeared as soon as the weather became fairly good. The little flock of Scaups staying so long on the pond was also somewhat remarkable. As I have remarked above, the number of Myrtle Warblers was extremely unusual.

Colorado Springs, Colorado, January 6, 1919.

LOSSES SUFFERED BY BREEDING BIRDS IN SOUTHERN CALIFORNIA

By H. ARDEN EDWARDS

ANY EFFORTS at estimating the probable increase or decrease of our native birds must take into consideration the very considerable loss sustained by them during their breeding season. A record of such known losses shows a surprising percentage of eggs and young birds destroyed during any one year, and the careful observer will at once notice a certain number of contributing causes which are fairly constant.

Taking these different factors in the order of their importance, we find that predatory mammals and birds hold first place. Preëminent among mammals is the common house cat; but the weasels, skunks, and coyotes also figure importantly. When I write predatory bird, my mind does not picture at once some noble falcon or swift flying raptor, but rather that skulking robber of the woodlands, the California Jay. Next as causes of loss come the rare storms of wind and rain, which, while of short duration, bring widespread damage, especially to nests and eggs. Thirdly, there is the ignorance and carelessness of man, which adds no small amount of destruction to the general total. And lastly, we may include the partial sterility of the birds themselves. I say partial, as I have never come across an instance where an entire clutch of eggs was lost from this cause.

To return to the first factor, we will naturally expect to see the preponderance of effect exerted here. Nature is always destructive in a constructive sense. Everything is sooner or later destroyed that something else may live. Death is written large upon every bird. The blossom only fulfills its purpose when it has faded and made way for the perpetuating seeds. So it is in bird life also; a bird may fulfill a purpose when it furnishes a meal for a wild animal; but when it falls prey to a tame cat, I fear Nature has been cheated.

Nature surely intends that no one species shall prey to excess upon some other species; therefore, the specialization which is evolved in the way of protective coloration, and defensive organs and habits. Take, as a specific instance, the orioles. The South American branches of this family have developed some remarkable methods of defense, such as that of the Caciques—which suspend their nests only in trees containing the nests of a very pugnacious species of wasp. Gadow tells us that in Mexico certain orioles have learned to tie their nests to the telegraph wires, where it is almost impossible for anything without wings to reach them. Our own North American species of oriole have learned to construct nests which insure a degree of safety, even from the marauding owl.

Now if Nature intended owl to eat oriole to excess I am sure the owl would be specialized to a point where the protective nest of the oriole would cease to be a hindrance. But when I see the amount of damage done by the jay, I feel as if Nature had slipped a cog somewhere; for, so far as I can see, the majority of birds have no means of protection against this arch robber.

I believe that nests of the type of those of the Bush-tit and Cactus Wren are primarily for protection against avian thieves; for certainly a Cactus Wren's nest would offer but slight obstacle to creeping reptiles, and none at all to the various species of rats and mice which are common in most cactus belts. To speak from personal knowledge: on the Mohave and Colorado deserts, and particularly the Mexican deserts, the large desert wood rats and ground squirrels cause the destruction of many nests. At Ensenada, Lower California, I examined colony after colony of the Bryant Cactus Wren, and found that a large percentage of the nests seemed to have been torn out by some small mammal.

In the case of the jay, as if to offset in some degree its ability to create mischief, Nature has endowed it with a cowardly disposition, and the average small bird when aroused will put it to flight. I imagine the sudden appearance of an angry wren or bush-tit at the door of its nest would rout the bravest jay. I think that the jay does most of its stealing of eggs and young when the parents are away. In the case of some of the very small birds it probably tries intimidation. I came across one instance of this kind this past spring. My attention was attracted by the actions and excited calls of a pair of Western Gnatcatchers in a clump of live-oaks. Approaching under cover of some adjacent bushes, I was able to see the cause of the disturbance. It was a jay, and he evidently had his eye on the contents of the dainty little nest of the Gnatcatchers near by. Heedless of their protests he was working his way nearer and nearer, but just when anticipation was merging into realization I shattered his hopes with a fusillade of rocks. It is a safe rule never to approach a nest openly if a person be in a locality where jays are plentiful. To do so spells certain ruin for that particular nest.

The crow must also be included as a destroyer of eggs and young birds, but it is harder to catch in the act. Personally I know of but few instances of destruction wrought by crows where the evidence was conclusive. Years ago, in Illinois, I was much amused when I caught a crow in the act of eating the eggs in another crow's nest; if this wasn't exactly a case of crow eat crow, it was at least a case of poetic justice. Another instance of its egg eating propensity was the destruction by a crow of a set of eggs of the Red-bellied Hawk in Los Angeles County, California. The remains of shells and contents, and a telltale black feather, told the story. This was in a locality where crows were nesting, and were very plentiful.

A storm in the late spring of 1918, although lasting but a few hours, was of such intensity and accompanied by such wind, that it caused the destruction of innumerable nests, especially pendant ones. Another cold, heavy rainstorm lasting several days visited southern California in June of the same year, at a time when normally all rains are over for the season. It played havoc with the hummingbirds and vireos especially, as they were at the height of their breeding season. While these storms cannot be classed as a constant factor in this part of the state (and I fancy nesting periods are pretty well adjusted to

seasonal conditions elsewhere) they cannot be totally disregarded in the general summing up of results.

A great many instances of loss through ignorance of man might be named. In this section the Valley Quail has a penchant for placing its nest in the orange groves. Many nests are destroyed in such places when the orchard is cultivated.

Loss through sterility is probably less than from other causes. Yet every active collector can remember scores of instances in this category. A striking example is that of a pair of California Woodpeckers which nest every year in a large live sycamore near my house. The first set taken from them contained four eggs, three of which were infertile. Another set, the following year, contained one fertile and two infertile eggs. The next year the nest had one young bird and three infertile eggs, while sets numbers four and five, in succeeding years, each had five eggs, four in each set being infertile. This is an extreme case, but I believe that the Picariae are more subject to this condition than most avian groups.

I have only touched upon a few high lights of this interesting subject, but the student of conservation will find food for thought and agree with me that, where Nature takes such toll, it requires but little to tip the balance in the wrong direction. A list of instances where losses were suffered by breeding birds in southern California as taken from my notes for the year 1918, follows.

Colymbus nigricollis californicus. American Eared Grebe. A common loss is occasioned by eggs being kicked from the nest as the bird gets on or off. In every breeding colony I have examined, numbers of eggs could be found at the bottom of the pond about the nests.

Sterna antillarum. Least Tern. Cats are the greatest causes of loss with this species, I believe. I have found numerous deserted eggs and remains of birds among the colonies, and W. Lee Chambers mentioned a case where cats were practically exterminating an entire colony near Venice, California.

Ægialitis nivosa. Snowy Plover. As with the Least Tern, cats do much damage.

Lophortyx californica vallicola. Valley Quail. Two nests were destroyed by young children, a number of others in orange groves, and one by a house cat which ate the female bird.

Lophortyx gambeli. Gambel Quail. Wright M. Pierce and myself found a nest of this species in the Coachella Desert, from which the parent had been eaten by some animal, judging from a number of broken eggs and other evidence present.

Melanerpes formicivorus bairdi. California Woodpecker. Sterility common.

Colaptes cafer collaris. Red-shafted Flicker. Sterility common. One set of six contained three addled eggs.

Chordeiles virginianus hesperis. Pacific Nighthawk. Sterility. One set of two had one egg addled.

Archilochus alexandri. Black-chinned Hummingbird. Nine nests were destroyed by jays after one egg in each case had been laid, two were destroyed by man, and ten by a heavy storm.

Calypte costae. Costa Hummingbird. Thirteen nests were all destroyed, presumably, by jays, as several jays were caught in the act. A majority of these nests were situated in cactus and were rather conspicuous. Six nests were ruined by a heavy rainstorm.

Calypte anna. Anna Hummingbird. Four nests were destroyed by jays.

Contopus richardsoni richardsoni. Western Wood Pewee.

Empidonax difficilis difficilis. Western Flycatcher. Several nests were destroyed by storm. I do not believe the rains did much damage, but undoubtedly they delayed the breeding season several weeks.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. I found a nest of this species at Baldwin's Lake, Big Bear Valley, which was occupied by a large Garter Snake.

The snake was distended from eating, presumably, the eggs or young, but made its escape before I could make certain.

Agelaius phoeniceus neutralis. San Diego Red-wing. A large colony nested in a wheat field. Their nests probably all were destroyed, as the grain was ready to reap and the nests contained one or two eggs each.

Euphagus cyanocephalus. Brewer Blackbird. Seven nests were destroyed by people near a house: the birds annoyed a sick person.

Carpodacus mexicanus frontalis. House Finch. Numbers of these nests are torn down around dwellings, and on the deserts small mammals cause a heavy loss.

Astragalinus tristis salicamans. Willow Goldfinch. Two nests of this species were found which had been taken possession of by white-footed mice. The eggs were still in the bottom of the nest. This happens commonly.

Astragalinus psaltria hesperophilus. Green-backed Goldfinch. Newly hatched young were found dead under a nest after a wind storm.

Junco oreganus thurberi. Sierra Junco. Sterility seems to be common in this species, particularly in certain sections where the nests are placed in wet moss and fern banks, though perhaps loss is due to chilling.

Melospiza melodia cooperi. San Diego Song Sparrow. A number of nests found had been taken possession of by white-footed mice.

Pipilo maculatus megalonyx. San Diego Towhee. Four eggs disappeared over night. The nest was torn out, probably by an animal of some kind.

Pipilo crissalis senicula. Anthony Towhee. Fourteen nests were destroyed. Of these, one was destroyed by a gopher snake, two by jays, two by man, and the rest by unknown causes. This species suffers heavily during the nesting season. One reason for this is that the actions and calls of the birds attract attention to their nests.

Passerina amoena. Lazuli Bunting. This is another species whose home the white-footed mouse frequently preëmpts. The eggs may usually be found buried in the bottom of the nest.

Petrochelidon lunifrons lunifrons. Cliff Swallow. Practically as many nests as there were pairs of birds were destroyed in Claremont, as the birds persisted in nesting on the college buildings, where they were a decided nuisance. Repeated destruction of their nests, and dousing the birds by means of fire hose, did not discourage them. I suggested letting them complete their sets before destroying the nests. This was done, whereupon they removed to other buildings where they were unmolested.

Vireo solitarius cassini. Cassin Vireo. Four nests were destroyed by rain and windstorm. Mr. Pierce reports others destroyed by the same cause.

Dendroica nigrescens. Black-throated Gray Warbler. One nest was torn out, cause unknown.

Wilsonia pusilla chryseola. Golden Pileolated Warbler. Two nests, in which sets were never completed, were found in a marsh.

Mimus polyglottos leucopterus. Western Mockingbird. Three nests were destroyed by jays.

Toxostoma redivivum pasadenense. California Thrasher. The sets disappeared from seven nests. One pair nested near a house, one egg was laid, and hatched. When the young bird was full grown, another egg was laid in the same nest, and also hatched. Later a new nest was built in another tree, and again one egg was laid. This fell prey to a jay.

Thryomanes bewicki charienturus. San Diego Wren. Two nests were destroyed, one by man and one by a snake or small mammal, as it was inaccessible to anything else, being under a large pile of cactus.

Chamaea fasciata henshawi. Pallid Wren-tit. Three nests were destroyed; cause unknown.

Psaltriparus minimus minimus. Coast Bush-tit. Eleven nests were blown to pieces by a windstorm; more were reported to me by others.

Hylocichla ustulata ustulata. Russet-backed Thrush. One nest was destroyed.

Claremont, California, January 22, 1919.

OLIVE THORNE MILLER

By FLORENCE MERRIAM BAILEY

WITH PHOTO

ONCE AGAIN California is called upon to mourn the loss of one of a noted circle of popular bird writers from the east who found within her gates, amid her myriad birds and flowers, rare satisfaction and ministration for their declining years. Bradford Torrey, whose last days were spent in Santa Barbara, died on October 7, 1912, at the age of sixty-nine, leaving eleven bird books; and Mrs. Harriet Mann Miller, better known by her pen name of Olive Thorne Miller, whose last years were spent in Los Angeles, died on December 26, 1918, at the ripe age of eighty-seven, also leaving eleven bird books as her contribution to bird lore. Both were members of the American Ornithologists' Union, Mrs. Miller having joined in 1887 and been made a Member, as Mr. Torrey was, when the class of Members was established in 1901. To those familiar with the writings of these two there is still further parallelism, for in their books we find much the same leisurely literary quality, the charm of humor, and the pervading vital interest in the birds whose ways they are portraying.

But while Mr. Torrey was well satisfied to accept the Rambler's Lease, and in his delightful discursive essays, such as those in Nature's Invitation and Field Days in California, man and bird figure with equal interest, Mrs. Miller's greatest happiness was to find the one bird she had perhaps traveled hundreds of miles to see, and hour after hour, day after day, and week after week, by patient, tireless study, note-book in hand, master the secret of that bird's home life. As she wrote, prefacing her chapters on the Kingbird's Nest and Three Little Kings, which represented nearly two months of field work, "However familiar the bird, unless the student has watched its ways during the only domestic period of its life—nesting time—he has still something to learn. In fact he has almost everything to learn, for into those two weeks is crowded a whole life-time of emotions and experiences which fully bring out the individuality of the bird. . . . Moreover, to the devotee of the science that someone has aptly called Ornithography, nothing is so attractive. What hopes it holds out! Who can guess what mysteries shall be disclosed, what interesting episodes of life shall be seen around that charmed spot?"

For twenty years she spent from one to three months in the country watching birds, visiting various parts of New York, New Jersey, North Carolina, Maine, New Hampshire, Vermont, Ohio, Michigan, Utah, Colorado, and California; accumulating the material which appeared in With the Birds in Maine, Upon the Tree Tops, True Bird Stories from My Note Books, In Nesting Time, Little Brothers of the Air, and A Bird Lover in the West. In New York and Utah I was with her and found that her one thought was to make an exhaustive study of birds unconscious of observation, a method which gave peculiar value to her work. To me, at that time, birds were companions from whom I wanted some response, but when I answered their calls and tried to get them to talk to me in her presence, I felt rebuked; she would never intrude upon them in that

way. The only time that I ever saw her willingly show herself to a bird was when she heard a Veery Thrush give its cry of alarm. She was seated in a comfortable piazza rocking chair at the moment, but sprang up and waded ankle deep through the soft plowed ground of a wide field between the house and the woods to go to its rescue.

Ordinarily when we went to the woods, she would steal in through the bushes in her leaf-colored gown, open her camp-stool cautiously at the foot of a tree whose dark trunk would help conceal her, pull down a branch before her and, with note-book ready, carefully raise her opera-glass and focus it upon the nest she wanted to study. And there she would sit in silence, stoically defy-

Fig. 18. Olive Thorne Miller.

ing tormenting gnats and mosquitoes, patiently waiting and watching to see what might befall.

Alert, keen-eyed, and conscientious to the flit of a wing, she kept a firm rein upon herself, never letting her imagination run away with her, allowing herself to generalize, or attribute her own thoughts and feelings to the bird she was watching; conscientiously writing up her field notes in detail every day, preparatory to putting them in final form for publication during the months following each field season. Scrupulously truthful and enthusiastically in earnest, she was indeed an ideal reporter of bird ways. If all observers had her spirit and devotion, what could we not hope for in addition to our knowledge of little known life histories!

In the summer of 1891, Mrs. Miller, at my solicitation, went up to Locust Grove, New York, to study the Hermit Thrush on his breeding grounds in my home woods. Board was secured for her in the only farmhouse near the woods, but when I found her in her cramped bare white-washed room with her box of books standing in the middle of the floor because there was no other place for it, I was filled with misgivings, not lessened by the memory of the luncheon in a fashionable New York woman's club to which she had taken me a few weeks before. I soon knew her better, however. With a table for her books and her indispensable rocking chair to write in, she became enthusiastic about her room, for through a closed blind she could watch the unsuspecting birds promenading up and down the fence and feeding in the bushes outside. Her books surprised me. They were all either on birds or nature, ranging from Coues' *Key* and the latest good bird books—she said she would like to have a new one every week—to the nature poems of Emerson, Sill, and Sidney Lanier. Twenty-four years later she wrote "That summer at your old home is a lasting source of pleasant memories to me. I can recall the road through that delightful woods almost *foot by foot* with charming details all the way, from the Thrushes' nest near the entrance to the Cuckoo's nest near the exit, and all the delights between." To me the summer, as the one spent with her in Utah in 1892, is rich in cherished memories, for Mrs. Miller was the most delightful of field companions. No beauty of forest or meadow, sky, cloud, or mountain escaped her, and she loved birds as she did nature. When, fresh from college, I saw her first, her hair was nearly white, but the discrepancy in our ages never seemed to occur to me, for she had the spirit and enthusiasm of youth, and we worked side by side as sisters.

The familiar question, how did she come to be interested in birds, is easily answered superficially, though no one can say how much responsibility the old revolutionary Mann ancestor of Bunker Hill fame had in the bend of the twig. While her first bird book was not written until 1885, as a mother of four children she had learned the educational value of true stories and especially of nature tales and had previously published several juvenile books dealing with birds and animals—Little Folks in Feathers and Fur being perhaps one of the best known. Then, her children being grown, and her time at her disposal, a fortuitous circumstance gave a new angle to her nature interest. An old friend from Chicago, the twenty-year home of her married life, Mrs. Sara Hubbard, a pioneer bird worker, came to visit her in her Brooklyn home, and together they went to Prospect Park, then as now rich in birds, and she caught the enthusiasm which lasted throughout her remaining years, inducing her to lecture, and to give bird classes as well as to write a half shelf full of bird books.

In her field work, special birds had a peculiar attraction for her, among them the Solitaire and the Phainopepla. "How I envy you the music of the Solitaire!" she wrote me in answer to a letter from its breeding grounds. "It is the most wonderful song in the world, I think." And when after visiting her married son in California, she was about returning to Brooklyn, she wrote that if she could find the Solitaire in Colorado she would give up her overland ticket and perhaps spend the rest of the summer studying him.

The Phainopepla was the burden of her song for years, associated as it was with her thoughts of California, which was her Mecca long before she was able to make it her home. "I am suffering from my old malady, California fever," she wrote me. And from Bailey Island, Maine, in 1902—"You see I

am back in my old haunts again, but I have left my heart, or a large part of it, in southern California. I could not bear to come away! I shall *never* be satisfied till I go back, and I want to *stay*. I don't know exactly what was the overpowering fascination for me, but it was there. . . . There is a most delightful place, full of Phainopeplas and other birds, in Pasadena, The Arroya; I got a family on The Arroya Drive to take me to board, a carpenter's family, and I had a simply glorious time there." A previous letter written twenty-four hours after her arrival in Pasadena tells its enthusiastic story. "My dear, he was the *first* bird to greet me! He came onto a beautiful pepper tree in front of my window and called a husky sort of imitation of the red-wings' 'o-ka-lee.' I was delighted of course, and I have spent this morning watching a pair. . . . Of course I am talking about the Phainopepla, the only bird for me just now. The place is in Pasadena, but has plenty of ground and overlooks a valley where birds abound. There's a beautiful chain of mountains across the back. It is simply glorious! And I am as wild over the flowers as over the birds. I reached here yesterday and I have stayed in the house only long enough to eat and sleep. . . . I hope you are used to rhapsodies. . . . I got too full and had to write to one who knows."

Some years after the death of her husband, Mr. Watts Todd Miller, a New Yorker like herself, and the marriage of her oldest son and daughter, the day finally came when her hopes and longings were realized and she was able to go back to California to live; and it was on the bank of that same Arroya "full of Phainopeplas and other birds" that her daughter, Mary Mann Miller, also a lover of birds, built the cottage suggestively called El Nido, half hidden by its vines and trees and flowers, which was to shelter her for the rest of her life.

By this time, Mrs. Miller had already far exceeded the allotted span of three-score-years-and-ten, but two more bird books, The Bird our Brother, and The Children's Book of Birds, and some half dozen of her delightful juvenile books, written now from both the mother's and grandmother's points of view, came from the ever-ready pen of the indefatigable worker; making in all twenty-four books and a bird booklet, published mainly by the Houghton Mifflin Company and E. P. Dutton, in addition to about seven hundred and eighty articles published in various papers and magazines.

One of her earlier books, The Woman's Club, was written when she was devoting much of her winter time to club work in Brooklyn and New York, and shows the same earnest purpose that underlay all her work; for she felt that to women denied college training the woman's club afforded not only a means of intellectual development but a help to a broader, wiser living. In her bird work, in the same way, she was inspired by a reverent belief in the uplifting, ennobling influence of nature.

When from failing eyesight she was forced to give up her work, her keenly active mind was fed from books read aloud in the family circle—always one of her greatest pleasures—and she still had the joy of being in her beloved land of sunshine and flowers, or as she most often referred to it in her letters, "the Land of Heart's Desire". Even then, in one of her last letters, there was a touch of the old enthusiasm for birds, for in the summer a Screech Owl, as she wrote "an innocent little Screech Owl who doesn't screech but utters a gentle call which I love to hear," took up his residence in the eucalyptus trees near El Nido. "Ah, if only I had eyes to watch him! I never had such a

chance," she exclaimed, for to her, her old work would always be, as she expressed it, "the most delightful work in the world—studying bird life."

Washington, D. C., January 27, 1919.

BIRD RECORDS FROM THE SACRAMENTO VALLEY, CALIFORNIA

By ALEXANDER WETMORE

FOR MOST of the period between August 17 and October 17, 1918, I was occupied in field work in the Sacramento Valley, California, between Marysville, Maxwell and Tehama, and, though not engaged primarily in the collecting of specimens, had daily opportunity for observation of birds. Considerable areas in this region are now utilized for the culture of rice, and the heavy irrigation necessary for this crop has made a condition favorable to water haunting birds over considerable tracts that formerly were entirely dry during the summer months. Small fishes brought down in the large irrigation canals were abundant in the flooded rice fields, and attracted many Great Blue Herons, Terns, Kingfishers and others, while water boatmen and aquatic insects of similar habit drew other smaller birds. The following brief notes of occurrence are those that seem unusual or of interest. For general information on the occurrence or range of birds in this area I have referred to J. Grinnell's list of California birds (Pacific Coast Avifauna, no. 11, 1915).

Dendrocygna bicolor. Fulvous Tree-Duck. A flock of 18 observed October 12 on the property of the Sacramento Outing Club, west of Live Oak.

Sterna caspia. Caspian Tern. Individuals of this species were observed near Maxwell on August 21, and September 6, 7 and 8. On September 7 a bird, in juvenal plumage, that was resting on a levee near a road, allowed me to approach within fifteen feet without becoming alarmed. Later I heard it giving the high-pitched whistled call characteristic of young individuals of this species, a note entirely different from the harsh, raucous screams of adults.

Ixobrychus exilis exilis. Least Bittern. One was flushed from a growth of cattails in a rice field near Butte Creek, west of Gridley, on September 14.

Herodias egretta. American Egret. This species was of common occurrence in suitable localities in the rice fields and adjacent flooded areas. These herons were observed first near Maxwell on August 18. On the following day seven were seen in one flock and four in another, while solitary individuals were observed elsewhere. A flock of seven frequented one area here for two weeks. Near Butte Creek, west of Gridley, fifty were seen in one place scattered about over a rice field or in pools of water near by, the clear white of their plumage standing out in pleasing contrast against the green of the grain. Near Maxwell thirty were observed in one flock on September 8. Others were seen on Butte Creek, west of Live Oak, on September 10, and farther north in the same region, on September 15 and 17. From this time on they were less numerous. Two were noted near Maxwell on September 25, and two others seen in the same region on September 29 were the last that were observed. It would seem from these records that the Egret is increasing in number in this region. E. D. Ricketts, State Deputy Game Warden, stated that white herons breed in a rookery on the Butte Creek sloughs, so that it seems possible that these may be Egrets. Adult birds were observed on several occasions, on extensive mudflats, driving immature individuals about, harrying them with vicous thrusts of their bills, and harsh squawks, as these herons do when they have abandoned their young to their own resources in securing food: an observation, however, of uncertain value as an indication that these young had been reared in the vicinity, as all were fully grown and strong on the wing.

Egretta candidissima candidissima. Snowy Heron. One was seen in a rice field four miles east of Maxwell on August 21, and another west of Live Oak, on Butte Creek, August 24. A third bird was observed near Maxwell on September 8. In all of these cases these herons were in company with the larger Egrets.

Lobipes lobatus. Northern Phalarope. On August 18 these birds were abundant in the region east of Maxwell, and remained fairly common in pools in the rice fields in the area between Maxwell and Willows until September 8.

Ereunetes mauri. Western Sandpiper. Common near Maxwell from August 19 to October 3.

Limosa fedoa. Marbled Godwit. Seen in small numbers east of Maxwell from September 5 to 8.

Aluco pratincola. Barn Owl. A dead Barn Owl was found in a road near Maxwell on August 21, and another on October 2. Both had been killed by striking wires, rather an unusual accident with such night prowlers as these. Another Barn Owl was flushed from an oak west of Live Oak on August 24. On September 15, west of Gridley, one was seen circling low over a rice field in bright sunshine, about three in the afternoon, and another was shot in a grove. The birds were apparently fairly common in occurrence here. Grinnell (Pac. Coast Avifauna, no. 11, 1915, p. 69) has recorded them in the Sacramento Valley only as far north as Woodland.

Chordeiles virginianus hesperis. Pacific Nighthawk. One observed near Live Oak on August 26.

Sayornis sayus. Say Phoebe. One seen near Stonyford on October 5.

Pica nuttalli. Yellow-billed Magpie. This interesting species was common among the oaks in a narrow area near the center of the Sacramento Valley between Marysville and Tehama. It was not unusual to find them in flocks of a dozen or more. Several were taken.

Biological Survey, Washington, D. C., January 15, 1919.

NOTES FROM THE FEATHER RIVER COUNTRY AND SIERRA VALLEY, CALIFORNIA

By JOSEPH MAILLIARD

CASTING around for a profitable locality in which to pass a good portion of the spring months of 1918, the region around Blairsden, on the Feather River, Plumas County, California, seemed to combine many desirable qualities together with the additional attraction of having been little, if ever, worked over from an ornithological standpoint. On this basis of reasoning several weeks were passed in this vicinity, between Mohawk, just across the river from Blairsden, at an elevation of 4300 feet, and Johnsville, farther up in the mountains, at 5200 feet altitude. As the summer approached, the base of operations was shifted to the Sierra Valley, Sierra County, altitude 5000 feet, where stays were made at Loyalton and Campbell's Hot Springs (about a mile from Sierraville). These two places are at the edge of the open Sierra Valley, where sagebrush and pine forest meet, and not more than fifteen or twenty miles from the Nevada state line.

Nothing startling was expected from this trip, and the results were mostly only corroborative of what one would naturally anticipate finding in such localities as those visited. Yet there are a few items in my notebook that appear to be worthy of recording.

Chaetura vauxi. Vaux Swift. Noted at Campbell's Hot Springs, one and a half

miles from Sierraville. A pair had been noticed flying about on the edge of the coniferous forest for a couple of days, and on June 15 the male was taken for the record. While this swift must nest in many places in the state, actual breeding records seem to be rare, especially away from the coast. Grinnell, in his "Distributional List of the Birds of California" (Pacific Coast Avifauna, no. 11, 1915, p. 85) gives no breeding localities outside of the humid coast belt, and I have not come across any other published record for California since that work appeared.

Sayornis sayus. Say Phoebe. Not having met with this species elsewhere in the localities visited on this trip, I was rather surprised, on my arrival at Loyalton, Sierra County, to see outside my window a pair of Say Phoebes giving a brood of youngsters a good flying start on the voyage of life, the date being June 6. At the same time, this pair appeared to be putting the finishing touches on a new nest upon a beam in a low shed in the adjoining yard, though this may have been only the repairing of the old nest from which the brood was practicing its first flights. On June 9, a small boy mistook the adult female for an English Sparrow (*Passer domesticus*), upon which he was waging warfare, and killed it with an air gun. This bird was in badly worn plumage and contained an egg almost ready to be laid. Apparently there is no published breeding record of the species for this part of the Sierras.

Pica pica hudsonia. Black-billed Magpie. A pair of magpies, apparently of this species, was seen at the edge of the town of Loyalton on June 8, flying among some old mill buildings. As this magpie is a common resident of the territory only a few miles east, in country not separated from Sierra Valley by anything more than the open, gently graded Beckwith Pass, and with but little difference in altitude, there seems good reason for believing that a few individuals occasionally wander westward into this valley, and that more would be found if a greater territory were covered than was explored on this particular trip.

Passerculus sandwichensis nevadensis. Nevada Savannah Sparrow. Along the railroad from Hawley to Loyalton, through the meadowy part of the Sierra Valley, small sparrows were often seen from the car window, and in the outskirts of the town some specimens were taken that proved to be of the above form. These birds were evidently nesting in suitable spots all through the valley, as far as Sierraville anyway, but no nests were actually found. Considerable water flows into the comparatively level valley from the surrounding mountains, forming swampy meadows that are ideal places for their nesting grounds.

Melospiza melodia fisherella. Modoc Song Sparrow. This proved to be the form common to all the localities visited on this trip, from 4000 to 6000 feet elevation, but it was really numerous in only one spot, a swampy meadow about a mile up the stream that flows through Mohawk, where there was a thick growth of short, brushy willows, and plenty of long grass. In all other places where noted it was more scattered, and was seldom seen far from streams. Three nests were found. The first, on May 21, containing a set of three eggs about half incubated, was in a swampy spot near a low bank of the Feather River, and was situated in long dry grass among some dead limbs in the edge of a small willow clump, and placed about ten inches above the ground. The other two were in thinly scattered willow trees in the midst of the little settlement of Mohawk. One of these was found on June 4, with nestlings almost ready to leave their domicile, and was in a thin bunch of willow trees, under which, and only a few feet from the nest, the small boys of the village noisily played the greater part of the day. The nest was about three and one-half feet above the ground and built on some very open branches.

I had noticed the parents of this nest for some time, but never dreamed that the birds would build in such an open spot right in the boys' playground, where the embryo farmers had dammed up a little irrigating ditch that ran past the willow tree. My attention was called to the nest by the boys themselves, who had not found it until the old birds were feeding their young, when the movements of the parents attracted their notice. The third nest was also shown me by the same boys when I returned to Mohawk to gather up material left there to be picked up on my homeward journey. This was situated in a quieter place farther up this same little ditch, and was about seven feet above the ground in some leafless branches of a small willow. On this date, June 17, it contained four apparently fresh eggs, but was not disturbed, as I was all packed up and waiting for the stage when the boys showed it to me.

Passerella iliaca mariposae. *Yosemite Fox Sparrow.* This fox sparrow is commonly found throughout Plumas and Sierra counties anywhere in the buck-brush and manzanita association above 4500 feet elevation, but is seldom, or never, seen out in the open sagebrush, although it occurs to some extent where the sagebrush meets the coniferous forest and mingles with the buck-brush. That is to say, this sparrow is found there in summer, but what it does in winter is probably quite different. This is the form most of us supposed was *megarhyncha* until the error was pointed out and the race described by H. S. Swarth (Proc. Biol. Soc. Wash., vol. 31, 1918, p. 161).

The males are certainly good singers, and, at least in the breeding season, spend a large part of their spare time perched upon some elevated limb, or top of a sapling conifer, endeavoring to outsing each other and all the rest of their avian neighbors. They have a close second in the Green-tailed Towhee (*Oreospiza chlorura*), of the same habitat, and the two together assuredly cheer up the otherwise lonely wastes of brush around such spots as Mount Eureka.

Two nests of the Fox Sparrow were found at Johnsville, one on May 30 with four eggs in an advanced state of incubation, and one with three nearly fresh eggs on June 1, but these dates seemed a little early for general nesting. The first nest was situated about three feet from the ground in a spirea bush, between some mine buildings and beside a path which was used constantly by the mine people, who passed only four or five feet from the sitting bird. The second was in a rather open barranca on a steep hillside, and was on the ground at the bottom, at the base of a small piece of rock. Any slight rush of water, say from a heavy shower, would have washed it away. As a rule the brush was so thick and heavy in the localities inhabited by these sparrows that nests were very difficult to locate. Perhaps this was partly due to the early date of my stay where they were numerous, as others have told me of finding nests without much trouble.

Progne subis hesperia. Western Martin. After getting settled in the quarters selected and making things ready for business on the afternoon of my arrival in Loyalton, Sierra County, I took a stroll through the streets of the small town, to familiarize myself with the place and to fix landmarks. Upon approaching the bank building, about three blocks from the hotel, my ears were greeted by a sound that was familiar but seemed so very much out of place in a California town that it was quite startling. An upward glance, however, was reassuring, for there, circling overhead, and perching upon the cornice of the bank building, were unquestionably a family of Western Martins, apparently having the time of their lives. A couple of blocks away was a genuine, old-fashioned martin box on a pole in the street. A few martins were going in and out, while a few more were circling around and perching on the gable of a nearby dwelling house; but evidently the young ones mostly had left the parental quarters, and preferred the bank building for their resting place. This was my first experience with the semi-domestication of the Western Martin and was a great surprise at the time, but I have since been informed that Pasadena has a similar colony. This will answer a query in the March-April, 1918, number of THE CONDOR, as to whether there were any successful martin boxes in the west.

Oreoscoptes montanus. Sage Thrasher. This bird has been recorded as a summer visitant in the northeastern sagebrush region of the state of California, but has not heretofore been put on record as having been found in Sierra County. Near Loyalton, however, a number were seen, and several of different ages taken in the early part of June. One of these was a female that was evidently laying. Some juveniles were seen flying about at the same time, showing that the nesting season must be rather prolonged in this locality.

This completes the small list of birds noted on this trip that seemed especially worth calling attention to. In most places visited bird life was scarce, remarkably so considering the apparent attractiveness of some of these localities, but either something was wrong with the surroundings or there were not enough birds to go around, for scarce they certainly were.

The number of varieties seen in the different localities where observations were made was as follows: Mohawk, two weeks stay, 58; Johnsville, eleven days, 37; Loyalton, six days, 47; Campbell's Hot Springs, seven days, 53.

I had expected to find the Calaveras Warbler and the Sierra Hermit Thrush (Hylocichla guttata sequoiensis) fairly numerous near Mohawk or Johnsville, but found none of the former and identified but one of the latter, which was the only one whose note was recognized as belonging to that species, its song leading to its capture for identification purposes.

San Francisco, January 22, 1919.

THE MARITAL TIE IN BIRDS

By LOYE HOLMES MILLER

IN THE CONDOR for October, 1918, Mr. F. C. Willard contributes a most stimulating article dealing with the question "Do birds mate for life?" In support of his affirmative contention he brings forward some observations resulting from his extended field work in southern Arizona.

His article is good and the facts recorded are unimpeachable. The interpretation of facts, however, introduces the human element into science, and hence offers a basis for divergence of honest opinion. It is not my desire to dispute Mr. Willard's conclusions but to offer, wholly in good faith, some remarks in support of the opposite side of the question, so that each reader may be his own judge, jury, and court of appeal.

I am free to say that I do not know whether or not birds mate for life, which statement is equivalent to admitting that I do not consider my own argument as conclusive. In all probability it often falls out that the same individuals come together in successive reproductive cycles, but such may be quite a fortuitous occurrence, due wholly to propinquity and not therefore proof of the truth of a more general conclusion. For some time it has been my own opinion that birds do not, as a rule, retain the same mates from one season to the next. At the risk of stepping from the realm of knowledge to that of speculation, I am offering in support of my position the following points, scarcely to be dignified by the name of evidence.

My first contention is that a bird's activities are almost wholly the result of instincts. These instincts are racial characters and are transmitted from generation to generation, no less truly, though perhaps more variably, than is color, size, or wing area. Only occasionally can even the layman contend that what we call intelligence enters in as a factor of behavior. Instinct bids a Hooded Oriole choose palm or yucca fiber as her nesting material, even though she place the structure in a gum tree or on a corn stalk, and failure of this instinct is almost as rare as is that failure in pigment formation which results in albinism.

My second contention is that instincts are dependent for their stimulus upon the physiological condition of the animal. Recent experiments on internal secretions have been performed by the transplantation of reproductive glands or by the infusion of tissue extracts directly into the blood stream. These experiments have some bearing upon our problem in that they go to prove that plumage differences between the sexes of poultry are directly controlled by the presence in the body of these germ cells, and that many instinctive acts are dependent, for their immediate stimulus, upon the activity of these glands. A

young capon in whose body the ovaries of a hen are grafted, will develop the feathering characteristic of the hen. The capon without the engrafted ovaries, will develop almost as the normal male. A normal female rabbit, treated by hypodermic injection with the extract of foetus in normal salt solution, will pluck the fur from her breast and build a nest as though expecting a litter of her own young, though none are developing. In these two cases a structural and a psychologic character, respectively, are influenced by a physiologic agent —a particular chemical substance. This substance is secreted and thrown into the blood stream by the germ cell or by the developing ovum, and constitutes one of those products, so important to the highly organized animal, which we term internal secretions.

The germ cells in birds, like those in most other wild animals, are seasonally active. As a result the reproductive gland may increase or diminish in size from ten to one hundred fold in regular cycles, which cycles are generally conformable to season. With the fluctuation in mass there will be a change in the amount and possibly in the nature of the internal secretion, hence the whole physiologic balance of the body will be seasonally affected. It is doubtless because of this ebb and flood of the physiologic tide that certain instincts, particularly those connected with the reproductive process, appear and disappear in orderly sequence each year.

It is maintained that the choosing of a mate is a purely instinctive act on the part of the wild bird. (It might often be discovered to be so among our august selves!) The choice is part of a great chain of events connected with the reproductive process as a whole; it is physiologic in its immediate origin, and therefore is of seasonal recurrence. During the dormant period of its reproductive cells, the bird is practically an asexual creature. Maleness and femaleness have disappeared entirely so far as interests, many activities, and often external appearance, are concerned. On the other hand, resumption of the germ cell activity initiates a new mating activity. The bird chooses a new mate.

So much for the theorist. What have we from the field observer? Among the forces that hold individuals together in the bird world, we may recognize at least three bonds, the parental tie, the marital tie, and the social tie. Of these three, which is of most importance as a bond of some duration? I contend that the parental tie is of greatest survival value to the race. We find it lacking in but few species, notably in cowbirds, in Old-World cuckoos, and in megapodes. But in these species the marital tie is also lacking as a persistent bond. The flocking tie alone, persisting in the cowbirds, results in a reprehensible Bohemian freedom and a Gypsy-like vagrancy of most unavian character.

Upon the duration of the parental tie, the whole care of the young and hence the safety of the race is hinged. It must outlast the period of the young's dependency, while the marital tie is not absolutely necessary beyond the momentary contact required for impregnation. We actually see the parental tie ruptured. The parent weans her young because of waning instinct, and further support is denied it. The parent and her offspring then become rivals, peaceful or otherwise. If such a fundamental tie be ruptured, why not also the less necessary marital bond? We find at least circumstantial evidence bearing upon the question.

At the close of the breeding season, a thousand Linnets assemble in a weed patch, there to feed from time to time during the fall and winter. The flock

is an impartial mixture of sexes and of generations, in which the social tie dominates the other two, if these other two exist at all at the time. Are they really present? Will the flock coagulate in the spring and give out the same marital combinations that existed during the previous breeding season? Is not parent just as liable to mate with its own offspring as with a member of its own generation?

Consider the case of our non-social birds, such as the Shrikes and the Mockingbird. The asexual winter bird sees only a competitor in every other one of his own species who invades the particular territory which he has preëmpted as his own. These birds are, with us here in the south, more or less localized as to individuals; hence it doubtless often happens that, through propinquity, the same combination of individuals may recur in successive years. But does this involve a marital constance? I doubt it.

Take again in the case of the migratory species. There is a separate migration of the sexes in many of them. By the end of August most of the male Hooded Orioles have gone from the neighborhood of Los Angeles. There are still plenty of females and young of the year. The same might be said of the Black-headed Grosbeak and of a number of other species. The "men folk" have gone off on a regular stag party (or Elk's excursion) to the tropics. Will their "women folk" follow after with the children and hunt up their neglectful lords? May they not even winter in separate intra-tropical states, spending the asexual part of their yearly cycle wholly unconscious of each other's being? On the return migration, the same separate movement may be observed. The vagrancy impulse seems to attack the males first and they push northward in great pioneer armies of males. I have seen a flock of male grosbeaks flying like a flock of blackbirds and entirely unleavened by feminine presence. They were just arriving from the south. Did their last season's wives follow later and claim, each, her recalcitrant spouse?

Then there are cases of abject desertion on the part of the male. Such is true of the Anna Hummingbird. I have found many nests of this species, in various stages of progress of the nest or of its content, but never yet have I seen the marital tie survive the early stages of nest building. The female completes the nest, incubates the eggs, and rears the young without assistance from the male. Mrs. Hummingbird is the original golf widow, with a husband somewhere at the club, but she is not sure where (nor probably does she care).

Perhaps we should not offer here as evidence the great variety of courting antics in which birds indulge, from the classic flight of the retiring woodcock to the dancing tournaments of the grouse. Are they merely for stimulus and not for selection of the mate? If birds mated for life would we see these courting activities so commonly? They would be needed only by the young and by the bereaved.

The theorist, however, feels it proper to ask the question: Are there not biologic reasons why a seasonal readjustment of the marital relation would prove advantageous to the race? If a protracted effort is required each season before a mate is obtained, the less virile bird will go unmated. Would not the result average better for the maintainance of tone in the race? Whatever else may be claimed for the principle of sexual selection, it seems to be more or less vital to racial vigor. Seasonal recurrence of the selective process would then be classed as a sort of protective adaptation in a class of animals showing abundant specialization in other respects.

The writer has often met in the layman's mind, a tendency to read into the behavior of lower animals the impulses of the human brain. Further still, some would impose upon the lower animal the restrictions of the Mosaic Law. In case the human law have no foundation in biologic law, is there any reason why it should be imposed upon the lower animal? On the other hand, let us examine some of the laws of human ethics and see if they are merely different ways of stating laws of nature. I have already used in the preceding pages of this now too long article the words "reprehensible", "recalcitrant", and "vagrant", but is it proper to do so? I maintain that the ethics which demands that the marital tie shall last "till death do us part" should not be imposed in those words upon the bird but that the same law, recast in terms of biology, is applicable to, and is observed by, a multitude of bird species. Let that law read thus: "The male and female shall coöperate during the period of the young's dependency upon parental care." Will it not work out for humans in the majority of cases, almost as well as does the ritual?

Take two biologic humans, uninfluenced by the artificial conditions of our later civilization. They establish the marital tie at the age of twenty years. The first offspring is born within the year and becomes independent at the age of eighteen or twenty. In the meantime there have appeared, at intervals of two years, other offspring to the number of ten. Is this an exaggeration for the biologic human family? By the time the last young is independent, the parents have lived in active coöperation for the period of forty years, and have reached the age of sixty. They had best not attempt any readjustment at that age, even though they have no grandchildren on their hands. The ethical law is really a biologic law and we didn't know it.

Apply the same restriction to the bird and you have a coöperative period not extending, as a rule, beyond the spring and summer of each single year, and sometimes for even less time than that. There is no biologic demand for a greater prolongation of the marital tie. Certainly there is nothing in the birds' code of ethics. Why hold to a human lettering of the law?

State Normal School, Los Angeles, California, February 1, 1919.

THE SUMMER BIRDS OF HAZELTON, BRITISH COLUMBIA*

By P. A. TAVERNER

WITH ONE PHOTO

HAZELTON, BRITISH COLUMBIA, is at the head of the Skeena River, at the forks where the stream is formed by the junction of the Bulkley and Babine rivers. It is the most northern point reached by the Grand Trunk Pacific Railroad, hence, with the exception of points on the new Hudson Bay Railroad, it is the most northern station reached by any of the main railway systems in America. In latitude 55° 20′, it is on line with the mouth of James Bay and slightly north of Hamilton Inlet on the Labrador coast. Situated as it is, at the head of navigation on the Skeena River, the supply route

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of all the northern parts of British Columbia, and on the line of the old Yukon telegraph line, Hazelton formerly enjoyed somewhat greater commercial importance than it does now, as but one of many stations on a transcontinental railroad system. It still remains, however, an important distribution center for the country to the north. Though geographically far north and in a latitude that in the east would exhibit arctic characters, the region about Hazelton is purely Canadian zone in its zoological and botanical aspects, though close to the Hudsonian boundary. It is situated at the inner edge of the coast range,

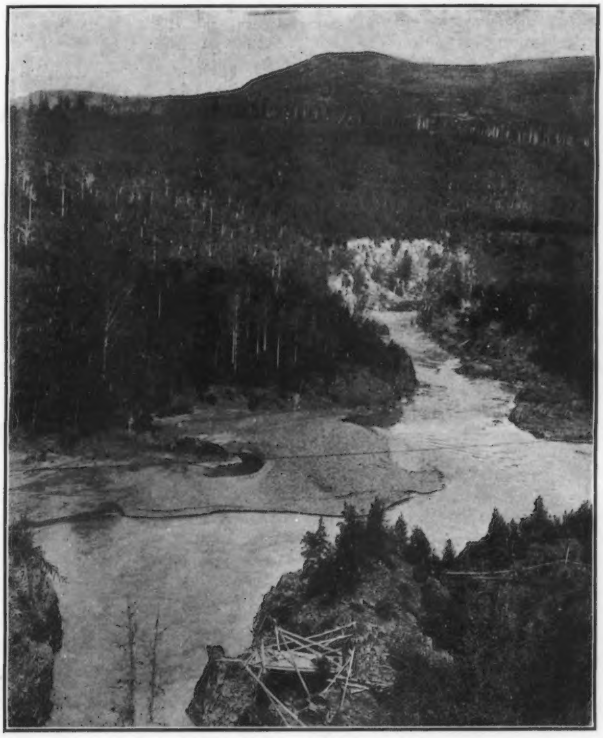

Fig. 19. THE BULKLEY RIVER, FROM THE SUSPENSION BRIDGE AT NEW HAZELTON, BRITISH COLUMBIA.

the lower altitude at about 800 feet. The surroundings are mountainous, Roche de Brulé, the highest mountain in the vicinity, rising 9000 feet above the sea level, while lesser elevations above the valley are numerous. The valleys are clothed with a dense growth of poplar, cottonwood and hemlock, with numerous Douglas firs and occasional particularly fine examples of birch. The mountain sides are mostly covered with Douglas fir, balsam and spruce. The upper limit of timber comes at about 5000 feet elevation. The whole country has suffered severely from fire, and, as a result, much of it is almost impassable with tangled second growth and fallen timber, making progress except along

trails or roadways arduous and slow. Fortunately the roads are exceptionally fine, or at least were during our season there; pack trails lead everywhere, giving access to all parts adjoining. There is little farming activity and most of the few clearings are devoted to the grazing of a few cattle and bunches of pack horses. The topography is rough and broken. At New Hazelton, four miles above the original settlement at the forks, the Bulkley River breaks through a ridge by way of a narrow canyon over three hundred feet deep. Across this gorge the wagon road is carried on a suspension bridge, one of the highest structures of its kind in the world. A few hundred yards up stream and at a little lower elevation are the remains of a unique bridge that fell this summer, built years ago by the original natives from wire from the abandoned transcontinental telegraph line.

This locality was collected in by two parties from the Canadian Geological Survey during the summer of 1917. The first, composed of J. M. Macoun and Wm. Spreadborough, was in the field from June 20 to July 21. They camped near (Old) Hazelton, on the shores of the Skeena River, and worked most of the mountains and valleys adjoining. The present writer joined a geological party for a week (August 23 to 29) at a point some two miles west of New Hazelton near the bridge across the Bulkley. Most of his work was done in the vicinity of the camp, and higher altitudes were scarcely visited. Birds were very scarce and retiring during this midsummer week and the work is worth reporting upon only as supplementary to that performed by Macoun and Spreadborough earlier in the season.

1. **Gavia immer.** Common Loon. A Loon was seen on the Skeena, August 22, by the writer, as the train he was on approached Hazelton. The species was noted almost daily by Spreadborough in June and July.

2. **Mergus americanus.** American Merganser. Not common at Hazelton. Spreadborough reports an adult and four young.

3. **Charitonetta albeola.** Bufflehead. An adult with four young seen by Spreadborough on a small lake near Hazelton, July 18.

4. **Actitis macularia.** Spotted Sandpiper. Reported by Spreadborough as a common breeder along the river; not seen about New Hazelton.

5. **Bonasa umbellus.** Ruffed Grouse. Several coveys and single birds seen at various times by both Spreadborough and myself. No specimens were taken, but *umbelloides* is the form to be expected here.

6. **Accipiter velox.** Sharp-shinned Hawk. Three seen by Spreadborough, and single birds observed by the writer nearly every day.

7. **Buteo swainsoni.** Swainson Hawk. One doubtfully recorded by Spreadborough, July 18.

8. **Haliaeetus leucocephalus.** Bald Eagle. One taken June 29; several noted in July.

9. **Falco sparverius.** Sparrow Hawk. Spreadborough found the Sparrow Hawk fairly common about Hazelton, and the writer saw several birds near New Hazelton. Two females taken July 2 and 9. I refer these to the type form, *sparverius*.

11. **Otus asio.** Screech Owl. I thought I heard the distant quavers and trills of this species a couple of evenings, but too faintly to be absolutely certain of the identification.

12. **Bubo virginianus.** Great Horned Owl. One seen by Spreadborough July 20 or 21.

13. **Ceryle alcyon.** Belted Kingfisher. Several seen along the river at Hazelton and one seen by the writer on the Bulkley.

14. **Dryobates villosus.** Hairy Woodpecker. Reported as common by Spreadborough, and one taken by the writer August 26. Three specimens taken by Spreadborough. Two of these birds are of slightly questionable identity. They are quite smoky below, but whether this is due to contact with burnt timber or is a natural coloration is

a matter of some doubt. If the latter they must be regarded as showing a tendency toward *harrisi*. Otherwise all are plainly referable to *monticola*.

15. **Dryobates pubescens.** Downy Woodpecker. Spreadborough reports seeing what he took to be Gairdner Woodpecker (*Dryobates pubescens gairdneri*), July 18.

16. **Picoides arcticus.** Arctic Three-toed Woodpecker. Fairly common, and, similarly to the next species, found at the edges of burnt timber. Four specimens taken by Spreadborough, July 11.

17. **Picoides americanus.** American Three-toed Woodpecker. Spreadborough reports it as fairly common at Hazelton along the borders of burnt timber, where it appeared to be feeding on larvae of the spruce-tree borer. Three specimens taken July 5 and 6. Being without comparable eastern material I include them under *fascialus* upon geographical probability, though I can see no sign of longitudinal striping on the back.

18. **Sphyrapicus ruber.** Red-breasted Sapsucker. Three birds seen by the writer, and two juveniles taken. Spreadborough reports them as common at Hazelton, he taking five specimens there. The adult males of this series are considerably brighter and with the back less spotted than our only California specimen, hence I refer all to *notkensis*.

19. **Phlœotomus pileatus.** Pileated Woodpecker. One seen by Spreadborough at Hazelton.

20. **Colaptes auratus.** Flicker. Fairly common. Four specimens taken by Spreadborough and two by the writer. The former are hybrids but nearer *auratus* than to *cafer*. The mixture of blood shows mostly in the intrusion of grayish in the throat, but the yellow of the shafts on some is deepened to dull orange. The two August birds from New Hazelton are by plumage pure *auratus*.

21. **Chordeiles virginianus.** Nighthawk. Several seen at Hazelton by Spreadborough. Again noted by the writer the evenings of August 25 and 26, but not thereafter.

22. **Cypseloides niger.** Black Swift. Nearly every bright afternoon a flock of Black Swifts was seen over our camp. Keeping in a loose company they drifted up and down the valley, coming and going until near evening. They usually kept high up, but occasionally one stooped low enough to be collected. Two were so obtained August 29.

23. **Chaetura vauxi.** Vaux Swift. Reported by Spreadborough as fairly common and breeding at Hazelton. Not recognized by the writer.

24. **Selasphorus rufus.** Rufous Hummingbird. Several seen by Spreadborough at Hazelton.

25. **Nuttallornis borealis.** Olive-sided Flycatcher. Three or four seen by Spreadborough at Hazelton, and one by the writer at New Hazelton. Two specimens taken, July 17 and in August.

26. **Myiochanes richardsoni.** Western Wood Pewee. Several heard by the writer August 24-27. Specimens taken June 28 and 30, July 16 and August 24.

27. **Empidonax hammondi.** Hammond Flycatcher. Spreadborough reports the Hammond Flycatcher as common. We have four adult specimens taken July 27 and 30, and two juveniles August 26 and 30. Both these latter are in the yellow-bellied phase and are so very similar to *flaviventris* as to be readily mistaken for that species. However, the throats are distinctly whitish, the green above grayish, and the bills and feet quite distinctive.

28. **Empidonax wrighti.** Wright Flycatcher. Though not mentioned in Spreadborough's notes he took specimens June 28 and July 10. Another was taken August 25.

29. **Cyanocitta stelleri.** Steller Jay. But one seen by the writer, a specimen taken August 25. Spreadborough does not mention it in his notes, but took two specimens June 28. The only constant character I can see in *annectens* is the presence of the gray spot over the eye. The other particulars usually given as diagnostic are unstable and unsatisfactory for individual identification. One of these specimens, a male taken June 28, has the spot, therefore I call it *annectens*. The other two are without it and I can only regard them as *stelleri*. These birds are slightly bluer on the back than the majority of specimens, but can be matched by individuals in either race. These two forms have broad fields of overlapping in their distribution, and in such localities their separation is purely arbitrary.

30. **Perisoreus canadensis.** Canada Jay. Six, seemingly a pair with young, noted by Spreadborough, July 18, and three collected. These birds are similar to those taken in Jasper Park on the east slope of the Rockies. They have extensive white fore-crowns, and blue-black hind crowns. *Fumifrons* is a slightly defined and unstable race, otherwise

they might be referred to that subspecies. As it is, I prefer to regard them provisionally as intergrades between *capitalis* and *canadensis*.

31. **Corvus corax.** Raven. A few seen by Spreadborough near Hazelton in July.

32. **Corvus brachyrhynchos** (sp?). Crow. Not common. Only a few seen by Spreadborough at Hazelton. None taken, so identity cannot be established. I assume that *C. caurinus* is a coast form and *C. b. hesperis* is a scarcely recognizable race.

33. **Euphagus cyanocephalus.** Brewer Blackbird. One pair with young noted by Spreadborough July 15. Two specimens taken.

34. **Loxia curvirostra.** American Crossbill. Several flocks observed by Spreadborough at Hazelton.

35. **Leucosticte tephrocotis.** Rosy Finch. Five seen by Spreadborough July 16 at an elevation of 6000 feet. Two taken are both *littoralis*.

36. **Spinus pinus.** Pine Siskin. Only one seen at a high altitude (5000 feet), by Spreadborough, July 16. Observed in flocks in August at New Hazelton in the lowlands several times. Specimens taken August 25.

37. **Zonotrichia leucophrys.** White-crowned Sparrow. Not common. Spreadborough reports but two seen. One specimen, taken July 15, is typical *gambeli*.

38. **Zonotrichia coronata.** Golden-crowned Sparrow. Not common. Only one seen, by Spreadborough.

39. **Spizella passerina.** Chipping Sparrow. Reported as common at Hazelton by Spreadborough, but not noted by the writer. One specimen, taken June 30, referred to *arizonae*.

40. **Junco hyemalis.** Slate-colored Junco. One specimen falls under this species, no. 10963, adult male (skull granulated), August 26. It is straight *hyemalis* except for a slight but obvious amount of red edgings on the back against which the gray of the hind neck cuts sharply. There is no rufus on the sides at all and I regard it as *hyemalis* with a slight infusion of *oregonus* blood.

41. **Junco oregonus.** Oregon Junco. The commonest species present during the August visit. Spreadborough reports it as a common breeder. Six specimens were taken in recognizable plumage, June 26 and July 5, 13, and 18, and two juveniles August 24 and 25. Besides these, numerous striped juveniles were secured, whose exact identity can only be conclusively established from accompanying parents. The June and July birds are typical *connectens*, while the August specimens in first winter plumage show a strong tendency towards *oregonus* in the richer redness of the back. The fact that the heads and throats of these birds are grayish instead of black, somewhat similar to *hyemalis*, I attribute to age rather than racial affinity. It thus seems that we have three forms of *Junco* at Hazelton, nearly pure *hyemalis*, *connectens* and *connectens* tending toward *oregonus*.

42. **Melospiza melodia.** Song Sparrow. Reported by Spreadborough to be not common, and only half a dozen specimens noted during his stay. In August a few were seen daily, but most were juveniles or in worn plumage. Seven specimens taken. These all appear to me to be *rufina*.

43. **Melospiza lincolni.** Lincoln Sparrow. Two seen at Hazelton by Spreadborough, June 26 and after. Three taken June 26 to July 17. Though I can perceive a slightly more olivaceous cast in fall birds from the west compared with eastern specimens, the difference in my opinion is too slight for subspecific recognition. I include them therefore under the typical form *lincolni*.

44. **Piranga ludoviciana.** Western Tanager. Common breeder at Hazelton according to Spreadborough, though the species was not observed by the writer in August. Four specimens taken June 27 to July 9.

45. **Iridoprocne bicolor.** Tree Swallow. Reported fairly common by Spreadborough at Hazelton, though not seen by the writer later. Specimen taken July 15.

46. **Tachycineta thalassina.** Violet-green Swallow. According to Spreadborough, a common breeder at Hazelton in June and July, though not seen by the writer in August at New Hazelton.

47. **Stelgidopteryx serripennis.** Rough-winged Swallow. Reported by Spreadborough to have been fairly common on the river in June and July, but not observed by the writer in August. One specimen taken July 4.

48. **Vireosylva olivacea.** Red-eyed Vireo. Several seen by Spreadborough at Hazelton in June and July. Not noted at New Hazelton in August.

49. **Vireosylva gilva.** Warbling Vireo. Fairly common at both Hazelton and New Hazelton. Nine specimens taken. I cannot see that these birds are any darker than eastern ones. If anything, they are slightly lighter and brighter in color. They certainly do not show any differences in measurements. The bills are slightly smaller and lighter, but in so illusive a degree as to make this feature of little value in separating them from *gilva*.

50. **Vermivora celata.** Orange-crowned Warbler. One Orange-crown taken August 28. It is too juvenile a bird to make subspecific pronouncement upon.

51. **Dendroica aestiva.** Yellow Warbler. Several seen by Spreadborough in June and July. But one noted in August. Three specimens taken, June 24 and 30, and August 28. These specimens seem to exhibit the racial characters of *rubiginosa* better than do most of our British Columbia birds, and therefore may be referred to that race.

52. **Dendroica coronata.** Myrtle Warbler. One specimen, a juvenile female, taken August 28, may be of this species. By tail spotting it might be either *coronata* or *auduboni*, and I cannot decide whether a faint tint on the throat is stain or a suggestion of the yellow throat patch.

53. **Dendroica auduboni.** Audubon Warbler. Common in June and July, and two seen in August. Five specimens taken, June 24 to July 18, and August 28.

54. **Dendroica magnolia.** Magnolia Warbler. Not uncommon. Spreadborough reports seeing five pairs that, from their actions, were probably breeding. Two were taken in August. Five specimens in all were taken.

55. **Dendroica striata.** Black-poll Warbler. One juvenile female taken August 25.

56. **Dendroica townsendi.** Townsend Warbler. Two seen August 25.

57. **Seiurus noveboracensis.** Northern Water-Thrush. On June 28 Spreadborough took two, and thereafter noted a number, always in low wet woods. These specimens exhibit the rather faint characters of *notabilis* in their highest degree.

58. **Oporornis tolmiei.** Macgillivray Warbler. Common in low bushes on burnt ground in June and July, and seen again August 20 and 24. Four specimens taken.

59. **Geothlypis trichas.** Maryland Yellowthroat. One seen and collected August 25. This is a juvenile bird that cannot be confidently referred to a subspecies.

60. **Wilsonia pusilla.** Wilson Warbler. One seen August 25. As it is only a sight record no subspecific designation can be given. *Pileolata* is the geographic probability.

61. **Setophaga ruticilla.** Redstart. Common. Six specimens taken, June 24 to July 10, and August 26 to 29.

62. **Certhia familiaris.** Brown Creeper. Two collected by Spreadborough, July 7 and 17. As these are juveniles they are referred to *zelotes* by geographic probability.

63. **Sitta canadensis.** Red-breasted Nuthatch. Several seen by both Spreadborough and the writer. Specimen taken June 24.

64. **Penthestes atricapillus.** Black-capped Chickadee. One of the commonest birds. Five specimens taken, June 15 to 25, and August 26 to 28. All are *septentrionalis*.

65. **Regulus calendula.** Ruby-crowned Kinglet. A small flock seen August 25. The brush was very dense and birds shot could not be found, hence no specimens.

66. **Hylocichla ustulata.** Olive-backed Thrush. Reported by Spreadborough as common and breeding. In August thrushes were so shy and retiring that their specific identity was difficult to determine unless the birds were collected. Two specimens taken July 6, and three August 25 and 26. Though these birds are very slightly more olive than eastern specimens, I do not care to separate them from *swainsoni*.

66. **Hylocichla guttata.** Hermit Thrush. Thrushes were often heard and glimpsed in August, but seldom seen plainly enough for identification. Three specimens were taken August 26. All are juveniles, and but one sufficiently advanced to base subspecific identity upon. I cannot separate it from *pallasi*.

67. **Planesticus migratorius.** American Robin. Abundant in June and July, and a few seen daily in August. Four specimens taken. I do not see in them sufficient grounds for separation from eastern *migratorius*.

68. **Ixoreus naevius.** Varied Thrush. One seen by Spreadborough July 20.

69. **Sialia currucoides.** Mountain Bluebird. Reported by Spreadborough as being common in burnt timber in July. It was not seen by the writer personally in Aug-

ust, though reports were received, leaving little doubt as to its presence in the vicinity. Five specimens taken, July 5 and 6.

Geological Survey, Ottawa, Canada, April 5, 1918.

FROM FIELD AND STUDY

An Early or Late Nesting of Green-backed Goldfinch?—On November 4, 1918, a neighbor called me over to inspect the nest of a Green-backed Goldfinch (*Astragalinus psaltria hesperophilus*) that he had found in his yard. The nest was in an apricot tree about eight feet up, and from which all the leaves had fallen. It contained two partially feathered young. The fact that autumn had bared the trees of their foliage made it look especially odd.—N. K. CARPENTER, *Escondido, California, November 14, 1918.*

Grackles Nesting in Herons' Nests.—On June 8, 1918, at Little Fish Lake, Moose Mountain District, Saskatchewan, on a wooded island, I found a colony of Great Blue Herons breeding. Under and in the sides of their large nests, which were about 25 feet from the ground, five or six pairs of the Bronzed Grackle (*Quiscalus quiscula aeneus*) had built their nests, these latter containing young.—H. H. MITCHELL, *Provincial Museum, Regina, Saskatchewan, October 25, 1918.*

Notes on the Black-bellied Plover and the Golden Plover.—It seems to me highly probable that the Golden Plover (*Charadrius dominicus dominicus*) may be more numerous along the Pacific Coast than is generally supposed, and possibly the same may be said of the Atlantic Coast also. Without wishing to cast any slurs upon ornithologists in general, it is nevertheless a fact that even the experienced bird man must be strictly on the alert in order to detect a Golden among a flock of Black-bellies (*Squatarola squatarola*). The average hunter undoubtedly consigns them all to the pot as the same thing, when, if he were only told the difference, he would be likely to hand the rare one over to a bird student.

The somewhat smaller size of the Golden Plover, with its three front toes and no hind toe, instead of the three front toes plus a well defined hind toe in the Black-belly, are evident enough when the bird is in hand. However, these recognition marks are obviously useless when the birds are flying or running along the beach. I know of but one wholly satisfactory clew to the birds in life, which is the tail and the upper tail-coverts. The Black-bellied Plover shows an exceedingly prominent amount of white on these parts, while the Golden Plover shows none at all, with the exception of a few bars on the tail.

Another means of field identification are the jet black axillars, in all plumages, of the Black-belly in contrast with the pale feathers of the Golden. These can be seen, however, only when the birds have their wings raised and are broadside to the observer; but any bird that shows black on the under side of its wings is not a Golden Plover.

For the benefit of those who do not know, it may be of interest to say that both of these birds are without much doubt to be found along the Pacific Coast, to at least as far north as the state of Washingon, at any time between August 15 and May 15. The Black-bellied Plover is a winter resident, beyond question, and the same would probably hold good with the Golden Plover (see CONDOR, XVIII, 1916, 31). Records of the Golden Plover along the Pacific Coast are so few that the estimate given above as to their probable time of occurrence must be taken as purely theoretical. However, my twenty-five years acquaintance with our North American shorebirds makes me fairly certain that the estimate is not greatly at variance with the actual facts, if these could be ascertained.

We have all undoubtedly posted our sportsmen friends to be on the lookout for a "Widgeon with a red head", which he must turn over to us without a feather missing. Having thus put a lookout for a male European Widgeon, let us also impress upon these same long-suffering friends the necessity of saving for us any Black-bellied Plover, also called "Beetle-head", that shows no white on its lower back and no black under the wing. It may not benefit you often, but it does sometimes.—J. HOOPER BOWLES, *Tacoma, Washington, October 15, 1918.*

Notes on the Behavior of Pintail Ducks in a Hailstorm.—On October 20, 1918, I was hunting ducks on the Rio Grande south of Las Lunas, New Mexico. I was sitting in my blind on a sandbar, with some dead ducks set out as decoys, when a very severe hailstorm set in. During the thick of the storm I discovered that a flock of about forty Pintail Ducks (*Dafila acuta*) had settled among my decoys not twenty yards distant. Each bird was facing toward the storm, and each had his head and bill pointed almost vertically into the air. The flock presented a very strange appearance, and I was puzzled for a moment as to the meaning of the unusual posture. Then it dawned on me what they were doing. In a normal position the hailstones would have hurt their sensitive bills, but pointed up vertically the bill presented a negligible surface from which hailstones would naturally be deflected. The correctness of this explanation was later proven by the fact that a normal position was resumed as soon as the hail changed into a slow rain.

Has any other observer ever noted a similar performance in this or other species of ducks, or in any other birds?—ALDO LEOPOLD, *Albuquerque, New Mexico, October 22, 1918.*

Unusual Occurrences of Bendire Thrasher, Forked-tailed Petrel and Western Goshawk.—In his *Distributional List of the Birds of California,* under Bendire Thrasher (*Toxostoma bendirei*) Dr. Grinnell says "no verification" of the Palm Springs record is now to be obtained. The specimen upon which this record was based is now no. 1507 in the collection of the San Diego Natural History Museum. It was taken April 8, 1885.

On December 23, 1918, as I was walking along the beach at Ocean Beach, California, looking among the drift marking the high tide line for dead fulmars, which occasionally wash ashore there, I found a Forked-tailed Petrel (*Oceanodroma furcata*). The place was within the city limits of San Diego. I believe this is the southernmost record for this species up to this time. The skin is no. 2031 of the Natural History Museum. As this was the first specimen of this species that I had handled I looked it up rather carefully. In reading Ridgway's description in his *Manual of North American Birds* I find that he divides the family into two subfamilies, *Procellariinae* with 13 secondaries, in which he places the genus *Oceanodroma*; and *Oceanitinae* with 10 secondaries. My *furcata* has but ten secondaries in each wing. The bird was in poor condition, but the flight feathers seem to be all there. Our *O. melania* and *O. socorroensis* appear to have 13 secondaries. Someone having the opportunity to examine fresh specimens of *furcata* should count the secondaries.

A Western Goshawk (*Astur atricapillus striatulus*) was shot by Rudolph Wueste at the Lower Otay Reservoir (about five miles north of the Lower California line) on November 9, 1916. It is now in the collection of the Natural History Museum of San Diego.—FRANK STEPHENS, *Natural History Museum, San Diego, California, January 13, 1919.*

The Sandhill Crane in Northeastern California.—On September 30, 1906, when studying the animals and plants in American Valley, not far from the town of Quincy, I was suddenly startled by the unmistakable rasping cry of a Sandhill Crane. It was loud and clear and came from the willow-bordered meadows near where I was standing, but the bird kept hidden by the tall bushes so that I was unable to actually see it. However, since there is no other bird whose note could possibly be mistaken for that of the Sandhill Crane, there can be no question as to the record. And as the date was too early for the arrival of migrants from the north, there is little room for doubt that the bird had bred on these meadows.

The absence of recent records in the splendid work on *The Game Birds of California,* by Grinnell, Bryant, and Storer, the latest being Henshaw's for 1878 and Townsend's for 1887, impels me to record the above note.

And while on the subject of Sandhill Cranes in California, it may be worth while to mention that on November 12, 1904, while witnessing an elk drive at Buttonwillow Ranch, at the southern end of San Joaquin Valley, I saw half a dozen Sandhill Cranes flying over. The people at the ranch told me that the Cranes would be common a little later, and that in the winter they were very destructive to sprouting grain.—C. HART MERRIAM, *Washington, D. C., January 29, 1919.*

Notes from Colton, California.—A set of eggs of the Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*) was collected near here in May, 1918. The nest was in a cavity in a dead stump and was twenty-two inches below the opening. While I was removing the nest material I was surprised to feel more eggs under the flycatcher's nest. These were eggs of the Red-shafted Flicker and all but one had holes in them. Possibly the flycatchers had driven the flickers out of the cavity, pecked holes in the fresh flicker eggs, and had then gone on with their nest building over the ruin.

May 7, 1918, I collected near here a nest of the Tree Swallow (*Iridoprocne bicolor*) containing three eggs of the swallow and one egg of the Western House Wren (*Troglodytes aedon parkmani*). The wren egg could not have been placed in the nest by a boy, as a section of the tree had to be removed before the nest could be examined. I observed the swallows taking feathers to the nest at least ten days before I collected the set. I did not see any wren near by.

A set of four eggs of the California Yellow Warbler (*Dendroica aestiva brewsteri*) was taken by me near San Bernardino on May 5, 1918. Elevation above sea level was about 1000 feet. I consider this a very early record for this species.—W. C. Hanna, *Colton, California, January 2, 1919.*

The Red-billed Tropic-bird in California.—A. W. Anthony, in 1889 (Proc. Calif. Acad. Sci., 2d ser., II, p. 86), predicted that *Phaethon aethereus* would be found to be "a rare visitant to the entire Pacific coast of the [Lower California] Peninsula," and Grinnell (Pac. Coast Avif., no. 11, 1915, p. 176), although relegating to the hypothetical list Bryant's record (Proc. Calif. Acad. Sci., loc. cit., footnote) for Marin County, California, based on a skull, expresses the belief that "the species . . . is likely to be observed sooner or later north of the Mexican boundary."

A specimen which proves to belong to this species was taken in the San Pedro Channel about midway between Long Beach, California, and Catalina Island, in August, 1916, by Captain W. H. Graves, who operates a small pleasure boat out of Long Beach.

When interviewed by the writer in September, 1916, Captain Graves stated that this bird or one like it had been observed on the last previous voyage—a day or two before the capture—and had sailed about over the boat; that, on the day of capture, the bird was again "picked up" near where it had been observed before, and was shot as it sailed overhead; and that he did not remember ever having seen another in the several years he had operated in the channel.

The bird had already been mounted by G. W. Stowe, a taxidermist of Long Beach, who had no further data, and it was later placed on exhibit in a glass case directly in front of a south window at the Long Beach Chamber of Commerce, by an anonymous friend to whom Captain Graves had presented it. Persistent effort to procure the specimen for scientific preservation failed.

Descriptive notes taken by the writer directly from the specimen in September, 1916, were substantially as follows. The plumage was mainly white, which predominated on the back in the proportion of two or three to one. The occiput was mottled with black, which there predominated. A narrow black band curving up from the gape extended through the eye and backward. Black barring extended from the occiput all over the back. The scapulars were black with white edges, as were also the coverts except on the shoulder. The primaries were black, with the inner webs of some, at least, white edged. The exposed secondaries were white. The rectrices were white with quills black, except in the extended shafts—eight or nine inches longer than the others—in which the quills were white. The under tail coverts were mottled with black. There was a creamy sheen to the uninterrupted white areas, without suggestion of pink. The taxidermist had painted the bill an orange red with yellowish tip, the tarsi an olive yellow, and the feet blackish, and had used eyes with *orange* irises.

The specimen thus apparently is in normal adult plumage, and is quite like a large series of the Red-billed Tropic-bird in the California Academy of Sciences collection from the Galapagos Islands. A single specimen of the Yellow-billed Tropic-bird in the same collection was also examined.—J. Eugene Law, *Los Angeles, California, February 10, 1919.*

EDITORIAL NOTES AND NEWS

We are not infrequently asked why THE CONDOR is not printed on a highly surfaced quality of paper such as will give a greater brilliancy of contrast and more detail in the photographic illustrations. There are two reasons why we adopted the present dull-finish, uncoated paper. Durability was the first consideration. The distant future should be considered in that our magazine is a repository of recorded facts which we want to be available in libraries 200, 500, years hence; and the lasting qualities of surfaced paper are very much in doubt. Just dampen a copy of THE CONDOR, indeed soak it over night, and do the same with a glossy-papered periodical, then dry them both, and compare results! Furthermore, and an immediate concern, as it happens, of those of us who have to do a great deal of close reading, the eyestrain is very much more trying on the reader in the case of glossy paper than with a dull surfaced stock. The Editor admits that he now rarely undertakes to read any publication in which surfaced paper is used—simply because of the personal, physical factor of eyestrain. On the whole, and lacking the resources for running separate "plates", we decided in favor of the present paper. Even so, did not our printer get admirable results with the halftones in the January CONDOR? Is there not something appealing as well as restful about those gray-toned Solitaire pictures?

From the very beginning of our interest in the names of birds we have been accustomed to use the generic name *Falco*, and this name has come to attach itself conveniently and with apparent scientific exactness to our ideas of the relationships of the raptorial birds. Now comes a school of genus splitters which is attempting to get the ornithological public to accept generic refinements which provide us with the name *Hierofalco mexicanus* for the Prairie Falcon, *Rhynchodon peregrinus* for the Duck Hawk, *Tinnunculus columbarius* for the Pigeon Hawk, and *Cerchneis sparveria* for the Sparrow Hawk. This is merely one instance in illustration of the tendency of the times in certain taxonomic circles. We have thought about the matter a great deal, and we have read the current literature relevant to these specific cases. We hereby *challenge* somebody or anybody to advance adequate grounds, either profoundly scientific or utilitarian, in justification of such ultra generic splitting! It is apparently the line of least resistance, when group relationships are in question, to subdivide, rather than unite; and hence the tendency. What we need is the higher plane of ornithological scholarship which will go at the expression of *likenesses* as well as differences between groups of species with a view to most exactly representing genetic relationships. Meanwhile, it seems to us that the general use of these questionable generic names had better be avoided, in the interests of uniformity and of clarity of understanding.

Many accounts of the damage done to rice by ducks have recently appeared in the newspapers, but gross exaggeration is manifest in the majority of these. Furthermore, the attitude taken by many sportsmen in their attempts to vindicate the birds has done more harm than good. The real facts in the case are now before the United States Department of Agriculture, as a result of the investigation by Mr. Alexander Wetmore, he having spent two months the past autumn in the four counties of California which lie in the Sacramento Valley, where large quantities of rice are grown. Dr. H. C. Bryant, Game Expert for the California Fish and Game Commission, has also been on the ground. The reports of these two men have shown that ducks do destroy rice after it has matured and also after it has been cut and is in the shock. The duck responsible for the damage is the Pintail. Although the ducks will not drop down into a thick stand of rice, they will seek out thin rice or places where there is open water. From such places they work out into the good rice, stripping the grains from the head and doing serious damage. Bombs have proved to be an economical means of driving ducks from rice fields. A few bombs properly handled will drive the birds from a large area and the birds are so frightened that they rarely return to the same place the following night. The rice grower who studies the situation and decides that he will outwit the birds need not suffer from depredations. The grower who says much and does little is the one who loses most. The United States Department of Agriculture has taken proper steps to give the rancher a fair chance to protect his crops.

MILITARY SERVICE RECORD

This list contains all the names which have come to the attention of THE CONDOR staff. The dates in parentheses indicate when the last word was received; in most cases this came direct from the one named or from a near relative. A few names with data have been taken from the last *Auk*, in which cases it is so noted. So far, no word has come of any casualty to a Cooper Club member.

ANDERSON, Ernest M., Private, Co. A, Royal Canadian Regiment, B. C. Special Ser-

vice Unit, Quebec, Can. (*Auk*, Jan., 1919.)

BARROWS, Dr. Albert L., First Lieutenant, 347th Machine Gun Battalion, 91st Division, A. E. F., Belgium. (Feb., 1919.)

BERGTOLD, Dr. W. H., Major, Medical Corps, U. S. General Hospital no. 21, Denver, Colo. (*Auk*, Jan., 1919.)

BROOKS, Allan, Major, 11th Canadian Infantry Headquarters, British E. F., France. (Dec., 1918.) In the service the entire period of the war, in sniping organizations. (Jan., 1919.)

BURLEIGH, Thos. D., Private 3d Detachment, 10th Engineers, Forestry Division, A. E. F., France. (Dec., 1918.)

CALDER, James A., Master Gunner Class, Enlisted Specialists' Preparatory School, 60th Co., Coast Artillery Corps, Ft. Winfield Scott, Calif. (Dec., 1918.)

CAMP, Charles L., First Lieutenant, Headquarters, 7th Field Artillery, A. E. F., France. (Dec., 1918.)

CHAPMAN, Dr. Frank M., Red Cross Commissioner, South America. (*Auk*, Jan., 1919.)

CROSBY, Maunsell S., Captain, Quartermaster Corps, Finance Officer, Camp Mills, N. Y. (Dec., 1918.)

DICE, Dr. Lee R., Private, Medical Department, Yale Army Laboratory School, New Haven, Conn. (Dec., 1918.)

DROWNE, Dr. F. P. (Dec., 1918.)

EASTMAN, F. B., Major, Infantry, Camp Grant, Ill. President of Discharge Board, and Camp Morale Officer. (Dec., 1918.)

FOWLER, Frederick H., Captain, Engineers, Office of Chief of Engineers, Washington, D. C. (*Auk*, Jan., 1919.)

GIBBONS, Dr. Morton R., Major, Medical Corps, Commanding Officer, Hospital, Camp Pike, Ark. (Feb., 1919.)

GOLDMAN, E. A., Major, Sanitary Corps, A. E. F., France. In charge of rat depredation control about supply depots. (Dec., 1918.)

GOSSE, P. H., Captain, 22d Army, British E. F., France. Later transferred to service in India. (Sept., 1918.)

HARTMAN, P. J., Engineers, A. E. F., France.

HOLDEN, F. Harvey, Captain, Battery F, 62d Regiment, Coast Artillery Corps, A. E. F., France. (Dec., 1918.)

HUNT, Edwin B., Aviation, Naval Reserve. (Feb., 1919.)

KELLOGG, Remington, Sergeant, Camp Hospital 29, Base Sec. 2, A. E. F., France. (Nov., 1918.)

KELLOGG, Vernon L., Food Administration work with Mr. Hoover in Europe, and Relief Commission work in Belgium. (Dec., 1918.)

KIRN, Alfred J., Base Hospital 55, A. E. F., France. (Dec., 1918.)

KITTREDGE, Jos., Jr., Captain, Engineers, Forestry Section, A. E. F., France. Firewood production for the advance section. (Dec., 1918.)

KOFOID, Charles A., Major, Sanitary Corps, Laboratory, Port of Embarkation, New York City. (Jan., 1919.) Now lecturing before army medical organizations. Earlier conducted hook worm survey of the Southern Department.

LINCOLN, F. C., Corporal, 8th Service Co., Signal Corps, Presidio, San Francisco. (Jan., 1919.) In charge of Headquarters Loft (Carrier Pigeon), no. 7.

LOFTFIELD, Gorm. (Dec., 1918.)

LORING, J. Alden, First Lieutenant, Ordnance Department, in Texas. (*Auk*, Jan., 1919.)

MAGEE, William A., Jr., Ensign, Instructor, Naval Aviation School, Pensacola, Fla. (Jan., 1919.)

MEYER, Miss Heloise, Red Cross, in France. (*Auk*, Jan., 1919.)

MITCHELL, Dr. Walton I., Major, Medical Corps, 805th Pioneer Infantry, A. E. F., France. (Dec., 1918.)

MOFFITT, James, Seaman, U. S. Naval Reserve, San Francisco, Calif. (Jan., 1919.)

MUELLER, Carl S., Second Lieutenant, Quartermaster Corps, Finance Division, Camp Merritt, N. J. (Dec., 1918.)

MURIE, Olaus J., Cadet, Army Balloon School, Ft. Omaha, Neb. (*Auk*, Jan., 1919.)

PALMER, R. H., Reserve Officers' Training Corps no. 9, Presidio, Calif. ("Nov. 1917" —*Auk*, Jan., 1919.)

PEYTON, Sidney B., Corporal, Machine Gun Co., 160th Infantry, 40th Division, A. E. F., France. (Dec., 1918.)

PHILLIPS, Dr. John C., Medical Corps, Ft. Benjamin Harrison, Ind. ("Dec. 1917"—*Auk*, Jan., 1919.)

REDINGTON, Robert R., Engineering Department, Dupont's, Wilmington, Del. (Dec., 1918.)

RICHEY, Howard J., Corporal, Ambulance Service Training Camp, Camp Crane, Pa. Enlisted in June, 1917. (Dec., 1918.)

ROBERTSON, John McB., Master Gunner Class, 60th Co., Coast Artillery Corps, Enlisted Specialists' Preparatory School, Ft. Winfield Scott, Calif. (Dec., 1918.)

SCHAEFER, Oscar F., Sergeant, 3d Detachment, 10th Engineers (Forest), A. E. F., France. (Dec., 1918.) Enlisted in June, 1917.)

SCHUSSLER, George W., Staff Sergeant, Of-

fice of the American Representative, Franco-American War Affairs Commission, Elysée Palace, Paris, France. (Dec., 1918.)

SHELTON, Alfred C., Second Lieutenant, Sanitary Corps, Camp Crane, Pa. (Jan., 1919.) Discharged.

SILLIMAN, Edmund, Naval Reserve. (Feb., 1919.)

SMITH, Allyn G., Second Lieutenant, Air Service, Instructor, Radio Officers' Training School, Columbia University, New York City. (Dec., 1918.)

STIVERS, Dr. C. G., Captain, Medical Corps, Air Service, San Francisco. (Dec., 1918.)

STODDARD, H. L., Sergeant, Co. B, 311th Ammunition Train, A. E. F., France. (Dec., 1918.)

STORER, Tracy I., First Lieutenant, Sanitary Corps, Laboratory Car 'Metchnikoff,' Ft. Sam Houston, Texas. (Jan., 1919.) Discharged.

SWEENEY, J. A., Private, Co. E, 2d Battalion, 20th Engineers (Forest), A. E. F., France. (*Auk*, Jan., 1919.)

TYLER, Dr. Winsor M., Captain, Medical Corps, Ft. Adams, R. I. (*Auk*, Jan., 1919.)

UFFORD, Elmer D., A. E. F. (Feb., 1919.)

VAN ROSSEM, Adriaan, First Lieutenant, Machine Gun School, Camp Hancock, Ga. (Dec., 1918.)

WALKER, Alex., Battery A., 45th Regiment, Coast Artillery Corps, A. E. F., France. Dec., 1918.)

WOOD, Casey A., Lieutenant Colonel, Medical Corps, Staff of Surgeon General, Washington, D. C. (Dec., 1918.) Entered service, June, 1917. Earlier, in charge of Examining Unit, Chicago, Ill., and then Chief of Head Survey, Camp Sherman, Ohio. Recently, Acting-Director of Board on Medical and Surgical History of the War. (Dec., 1918.)

WRIGHT, Howard, Navy.

YOUNG, John P., Major, Camp Dix, N. J.

COMMUNICATION

TRINOMIALS AND CURRENT PRACTICE

Editor THE CONDOR:

It seems to me that various points brought up by Swarth in his review (CONDOR, XX, 1918, pp. 141-142) of Taverner's papers in the "Summary Report of the Geological Survey, Department of Mines, for the Calendar Year 1916" (Ottawa, Canada), and Mr. Taverner's reply to the same (*ibid.*, pp. 213-216), are worthy of further discussion. There have been several innovations in ornithological practice during the past year, and at least the main points of these merit careful consideration by American ornithologists.

For bird papers of a strictly "popular" style, the method of procedure adopted by Mr. Taverner in his articles could be used with gratifying results. This class of literature is increasing in quantity and popularity, and for such, the purely trinomial nomenclature is admittedly cumbersome and confusing to many readers. How much better would it be for authors uniformly to use the binomial for the Latin, and the specific name for its English equivalent, instead of the name of the eastern race as is commonly employed in such case. For entirely scientific, and what I may term popular-scientific work, however, the old system seems better, although it is far from ideal.

Mr. Taverner says that the plan which he has followed "discourages the unconsidered copying of names and encourages original research". In future years, however, when gathering published information for a report on some general region, another author cannot personally verify all binomial records and identify all the specimens referred to. In fact, if this binomial system were in general use, it would be almost impossible for anyone to prepare an authoritative report on a region, because of this difficulty of using previously published information. Even though Mr. Taverner does make trinomial notations at other points in his papers, that does not alter the general complexion of the matter, for an article which is both binomial and trinomial in nomenclature has the faults of both systems and the advantages of neither.

I think that the majority will agree with Swarth that "the value of such a list lies largely in the exact subspecific determination of the various forms at the points at which the specimens are taken"—*all* of the forms, and not just those which the author deems worthy of special notation. Unless some contributions to the habits and life histories of birds are given also, that is its *only* value, as I see it. Although in the vast majority of lists, specimens of all subspecies mentioned have not been secured, one who is familiar with his locality can be reasonably certain of identities, usually, and if he is not, he should, and often does, indicate his uncertainty. To an expert in geographical distribution, the binomial name possibly conveys all that is necessary, but the average reader and bird student wants to know the *probable* form encountered, and will almost never bother to search out its logical identity.

I heartily agree that too many articles are "thrown together" without the proper

determination of material, but this is the fault of individuals and not of the system. Also it is true that subspecific designation is only a part of ornithology, and not its end, but it is a very important part, and although current usages are far from perfect, we should be very careful not even partially to adopt others that would prove less so.

While I am writing this, I wish strongly to protest, though probably in vain, against the indoor sport taken up by many quasi-ornithologists of condemning, without any consideration whatever, every new subspecies which is described. If, after careful comparison of typical material, one who is reasonably familiar with his bird decides that the form in question is untenable, I have nothing to say, for I "live in a glass house" and there are many forms which I think unwarranted. However, the style now seems to be for many who know little about birds, to throw up their hands in horror at every new thing described, without ever having seen a skin of that form. Even if material has been examined and no differences noted, the amateur or semi-amateur must remember that, in the first place, his skins may be intergrades, and in the second, that he may be unable to recognize differences which to a trained specialist may be perfectly apparent. And so, even if there appear to be entirely adequate grounds for objections, one should be careful to keep from joining in any of Osgood's classical "dribbling protests."—A. B. HOWELL, *Covina, California, December 26, 1918.*

PUBLICATIONS REVIEWED

THE GAME BIRDS OF CALIFORNIA | Contribution from the University of California | Museum of Vertebrate Zoology | By | JOSEPH GRINNELL | HAROLD CHILD BRYANT | and | TRACY IRWIN STORER | University of California Press | Berkeley | 1918. Large 8vo, pp. x+642, 16 colored pls., 94 figs. in text, 1 table inserted; issued December 28, 1918. Cloth, $6.00, net.

The need of a work such as this has been too real to require further comment after the deficiency has been so adequately met. The Game Birds of California will win immediate approval. From the dark blue, gold-lettered cover and excellent colored plates to the dull surfaced paper and beautiful typography it is consistently an admirable book. And if this praise of externals seems unduly to extoll a less important feature, let the reviewer confess himself a lover of attractive books and remind the reader that in good society, science well-dressed is not without appreciation, and even praise.

To one who knows all three authors, they seem a very happy combination of craftsmen. Certainly the finished product has justified Doctor Grinnell's prefatory statement—"namely that the highest plane of scientific output can be accomplished only through coöperative effort. . . . Where one author working alone would make mistakes unawares, two, or better, three, are able to check one another's output to advantage. The best results, always granting mutually sympathetic interest, will follow organized coöperative toil."

We learn from the introduction that "In preparing the present volume the authors have attempted to meet the requirements of a varied public. The hunter wishes information concerning the haunts and the habits of our game birds; the naturalist wishes to have the completest possible data regarding their life histories; the legislator who appreciates the necessity of judicious game laws wishes to have the facts that are relevant to his purpose presented in concise form; and the conservationist desires that information which will assist him in his efforts to perpetuate our bird life for the ultimate benefit of the greatest number of people. Whether the needs of these various classes have been adequately met in the following pages remains to be proved, but it may at least be stated here that none of them has been overlooked. To each of the four categories of persons above mentioned, this book is offered as a working manual." It seems to the reviewer that the authors have lived up to the task which they set for themselves.

One of the underlying incentives for the publication of The Game Birds of California was found in the decrease of many species of game birds and the seeming indifference of the public toward instituting rational measures to conserve them. The book adequately treats of the means to be taken to conserve game and makes practical recommendations suited to each species.

Introductory chapters are devoted to general subjects, as follows: Decrease of Game and its Causes; Natural Enemies of Game Birds; The Gun Club in California; History of Attempts to Introduce Non-native Game Birds; The Propagation of Game Birds; Legislation Relating to Game Birds in California. The sportsman and nature lover will find much of immediate utility in these general chapters.

The technical matter useful to the special student of birds is found condensed in small type at the head of each discussion. This makes reference to the finer characters of each species easy, and at the same time segregates this formal matter from the more readable text following.

The plan of treatment of each bird follows a regular sequence: Technical portion (in small type): Accepted common and scientific names; other names; description: adult male, adult female, juvenile, downy young; marks for field identification; voice; nest; eggs; general distribution; distribution in California. Text (in large type): General and local distribution; migration; field marks; life history; nest, eggs, young; habits and behavior; food; economic value; present and probable future status.

Every one of the 108 native game birds of the state is described in detail, these including the ducks, geese, swans, ibises, cranes, rails, snipe, sandpipers, curlew, plover, quail, grouse, pigeons and doves. The localities in which each is found, and the times of the year when it is found, are designated and its life history and habits are accurately and well described.

Some of the life histories are unusually full—notably those of the commoner and more popularly known species; and while justice is done to the observations of previous workers, much new material of sterling worth is woven into the entire fabric of the book. Thus it is a substantial contribution to science—to the body of ascertained fact.

All through the book especial attention is given to those distinctive characters of a bird that help to make it recognizable from other species when alive, at a distance. A useful field manual is thereby provided. A dependable key to the various species makes possible the identification of any specimen in hand. The index contains all the common as well as the scientific names, thus making it easy to locate any bird, provided some name is known, even though this name be a very local, popular one.

Unquestionably the sixteen colored plates contribute very materially to the usefulness and attractiveness of the book. Thirteen are by Fuertes and the rest by Allan Brooks —all in the happiest vein of these accomplished artists. Twenty-one different game birds are figured in color, and the portraits are not only aesthetically satisfying, but eminently informative as well—two qualities which are not necessarily associated. The figures depict the birds in their characteristic, or usual, Californian environment—and let me emphatically state that these are no T-perch effigies, but real live birds, transferred in miniature to the printed page, retaining all the vitality of a "cinematic" likeness. For instance, feel the perceptible "honk" of the geese on plate 6, or the hurry of the rail stepping off on plate 9; or the quiet animation of the quail in plate 1, or the dynamic quality of the mudhens of plate 10. The ninety-four line drawings in the text serve largely to illustrate characters of plumage, bill, or feet, such as are especially helpful in identifying the different kinds of game birds.

Much credit is due to a Berkeley gentleman, whose name is withheld, and to Miss Annie M. Alexander for providing the "sinews of war"; to the former for supplying funds to carry on the economic work and to the latter "for the continued financial support, furnished in generous measure" to the Museum of Vertebrate Zoology, through whose opportunities the game bird book was brought to a conclusion.

Certainly everyone interested in California birds will wish to possess this book. If little has been said directly concerning the text, it has been because the reputation of the authors has seemed to the reviewer to render such special commendation superfluous. From Grinnell, Bryant, and Storer a high grade of work is a matter of course, since they stand high in the Bradstreet of ornithology. Theirs must be the satisfaction of craftsmen who have done something better than it has been done before; and they are to be congratulated for having so worthily represented their institution in the commemorative series of the Semicentennial of the University of California.—W. K. Fisher, *Hopkins Marine Station of Stanford University, Pacific Grove, California, February 8, 1919.*

Some Recent Investigations on the Food of Certain Wild Birds. By Walter E. Collinge, D. Sc. F. L. S. The Journal of the Board of Agriculture, vol. xxv, September, 1918, pp. 668-691, 17 diagrams in text.

Under the above title, Dr. Walter E. Collinge, now the foremost economic ornithologist of Great Britain, throws new light on the economic value of nine species of British birds. The three main points made in the introduction are: Need for more knowledge on the food habits of birds, because of their direct relation to agriculture and food supply; the intricacy of the problem; the casual and unscientific manner in which the subject has been treated in the past. The

food habits of the same birds as are here studied were presented in a paper by the same author, published in 1913 under the title "The Food of Some British Wild Birds". The method used in the earlier paper in estimating the crop and stomach contents was that known as the numerical method. The present paper is the result of a re-investigation, using the volumetric method. Under the heading of methods, a discussion of the numerical as compared with the volumetric method is given, with the conclusion that the ratio of each element to the average capacity or cubic contents of the bird's stomach gives the most accurate idea of the relative proportions of each kind of food. It is pointed out that this method, so widely used in the United States, is here practiced for the first time in connection with British birds. An attempt is thus made to state in definite figures the actual percentages of the different kinds of food consumed by each species during a whole year. The evidence is presented after an examination of 3670 adult specimens obtained during each month of the year, and 595 nestlings.

The treatment under each species consists of introductory statements, followed by post mortem records, food of nestlings, and a conclusion based on the evidence as to the economic status of the species. The change in method leads the writer to change his stand regarding the economic status of the Missel Thrush. The judgment after a numerical analysis of the food led to the statement that the Missel Thrush "for four months in the year does more harm than is counterbalanced during the remainder of the year". The judgment after a volumetric analysis leads to the statement: "In spite of its depredations in fruit orchards, this bird must at present be regarded on the whole as beneficial".

It is pointed out that the House Sparrow is one of the best-known birds in history, probably being known to people of whom we have no written records. "When writing was invented the Sparrow was selected for the hieroglyphic symbolising enemy, and proofs of its destructive habits have been cited by certain authors showing that it has been the enemy of mankind for more than five thousand years". Investigation of the food habits of this bird does not alter the attitude taken many years ago. The Rook is shown to be more harmful than beneficial, in the present abundance of this species. The injury to seed corn and other crops by the Skylark is far outweighed by the benefits it confers in destroying injurious insects. The Green Woodpecker is shown to destroy large numbers of injurious insects and to seldom, if ever, attack sound trees. It is, therefore, "deserving of every protection". The injuries inflicted by the Sparrow Hawk "are considerably in excess of the benefits it confers, and in consequence it should be afforded no protection". The Kestrel is a bird "certainly deserving of very strict protection". The Wood Pigeon probably consumes 57 pounds of food per year. Of this about 35½ pounds is grain, clover, roots and pulse, 20½ pounds of weeds, grass, earth-worms, etc., and about one pound of slugs, snails and insects. The writer, therefore, advocates the destruction of this bird as a pest. The food habits of the Lapwing demonstrate the need for "prohibition of the taking or killing of this bird or its eggs throughout the year".

Of the nine species of wild birds the House Sparrow and the Wood Pigeon are shown to be distinctly injurious. Because of their abundance, two others, the Rook and the Sparrow Hawk, are also injurious. One, the Missel Thrush, although as a rule beneficial, is sometimes locally too numerous. The Skylark, the Green Woodpecker, the Kestrel and the Lapwing are highly beneficial. Strong repressive measures against the first category, the withholding of protection from those of the next two categories, and the strict protection of the four beneficial birds are advocated. The paper is illustrated by seventeen diagrams, showing the proportional amounts of the different kinds of food, and a bibliography, citing twenty-three papers, is appended.

Dr. Collinge in casting aside the numerical method for the American method of computing the stomach contents of birds makes it appear probable that the latter will be universally used in the near future, with the result that the work of economic ornithologists throughout the world will be directly comparable. Heretofore, because of the wide difference in method it has been practically impossible for Americans to profit by the work of Europeans.—HAROLD C. BRYANT, *Museum of Vertebrate Zoology, Berkeley, California, January 1, 1919.*

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

SEPTEMBER.—The meeting of September 26, 1918, was called to order by President Miller, with members Daggett, Holland, Howard, Howell, Law, Mrs. Law, Lelande, Little, Owen, Reis, and Willett

present, and as visitors Mesdames Holland, Howard, and Howell. On motion by Willett, seconded by Lelande, those members nominated at the August meeting were duly elected.

Names of new members were proposed as follows: J. J. Furber, Klamath Falls, Oregon, Dr. L. E. Hibbard, Burns, Oregon, and Dr. Geo. W. Field, Washington, D. C., proposed by Geo. Willett; H. L. Dillaway, Everett, Washington, by Walter P. Taylor. From the Northern Division: Maria V. Ballard, Spokane, Washington, by Dr. H. C. Bryant.

Mr. George Willett told his summer observations of breeding conditions at Malheur Lake, Oregon, and of the effort being made by real estate promoters to have this lake drained. Investigations indicate that the land is an alkaline basin, too saline for agricultural purposes, since there is poor drainage, and therefore no legitimate reason exists for its reclamation. Furthermore, there are untold acres of untilled land on its borders, and the abutting property owners around the lake are practically unanimous in opposition to draining the lake, foreseeing their own ruin in such procedure.

On motion by Lelande, seconded by Daggett, a resolution was passed protesting at the proposed drainage plans, and copies ordered sent to the Governor of Oregon and to the State Land Commissioner of Oregon.

Mr. A. B. Howell, just returned from four months in southern Arizona for the Biological Survey, gave some side lights on his trip. Travel was difficult, and two years drouth made waterholes scarce. On the other hand, cloudbursts complicated matters at times. His entire outfit, except specimens, was submerged by one. A broken differential 70 miles from a railroad and 24 miles from a water hole, added to the spice of Arizona's worst desert. Mammalian life had been decimated, and many birds did not breed at all this spring. While he made no new state records of birds, there were many new local records. His route zigzagged across the portion of Arizona lying south of the Southern Pacific Railroad, from Yuma to Tucson, ending with a month in the Catalina Mountains.—J. EUGENE LAW, *Secretary, pro tem.*

DECEMBER.—Regular monthly meeting of the Cooper Club, Southern Division, was held at the Museum of History, Science and Art, at 8:00 P. M., December 26, 1918. Members present were: Messrs. Appleton, Barnes, Brouse, Chambers, Hanaford, Rich, Reis, Robertson, Willett and Wyman. In the absence of President Miller, Vice-president Willett occupied the chair.

Minutes of the November meeting were read and approved, and October minutes of the Northern Division were read. On motion by Dr. Rich, seconded by Mr. Chambers, the Secretary was instructed to cast an electing ballot for the parties whose names were presented at the previous meeting. New names presented were: Raymond Jones Middleton, Jeffersonville, Penn., and Charles Irving Rawson, Oxford, Mass., by W. Lee Chambers.

The death of Olive Thorne Miller, for years a Cooper Club member, having been anounced, it was deemed proper that the Club should pass resolutions of regret, and Dr. L. H. Miller was appointed a commitee of one to draft such resolutions. Owing to the small attendance it seemed best to defer nomination of officers for the coming year until the January meeting, and on motion by Mr. Chambers such postponement was ordered.

Formal business matters disposed of, Judge Barnes favored the members with an interesting talk on his experiments with the Trumpeter Swan, and numerous species of wild geese, in captivity. He spoke also of conditions affecting the nesting of the Wood Duck, on the Illinois River. Adjourned.—L. E. WYMAN, *Secretary.*

NORTHERN DIVISION

NOVEMBER.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology on the evening of November 21, 1918, at eight o'clock. Dr. Evermann presided, and the following members were present: Messrs. Anderson, Bryant, Cohen, Garlough, Grinnell, Hansen, Jacobson, Kibbe, Labarthe, Lastreto, Leggett, Stivers, Swarth; Mesdames Allen, Bamford, Ferguson, E. Ferguson, Griffin, Grinnell, Kibbe, and Wythe. The visitors present were: Mrs. Evermann, Mrs. Labarthe, Mrs. Swarth, Miss Alice Wythe and Mr. Humphreys.

The minutes of the October meeting were read and approved. Mr. A. S. Kibbe reported for the Committee on the Conservation of Wild Life.

The Club then enjoyed the privilege of hearing Dr. C. G. Stivers, Captain, Medical Reserve Corps, Aviation Department, who read entertaining selections from his exhaustive paper on "Bird Flight and Human Flight". Practical demonstrations of some

of the fundamental principles of aeroplane construction and of tests used to determine the fitness of men for aeroplane service were also most interesting. After discussion the Club adjourned.—AMELIA S. ALLEN, *Secretary.*

DECEMBER.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, December 19, 1918, at eight o'clock. Dr. Evermann presided and the following members and visitors were present: Messrs. Carriger, De Groot, Dixon, Grinnell, Hunt, Jacobsen, Kibbe, Labarthe, Lastreto, Leggett, Mailliard, Pemberton, Ray, Wheeler, Wright; Mesdames Allen, Kibbe, Knappen, and Schlesinger; visitors: Mrs. Evermann, Miss Mary Elizabeth Grinnell, Mrs. Pemberton, Mrs. Swarth and Mr. Lincoln.

The minutes of the November meeting were read and approved, and the September and November minutes of the Southern Division were read. Members already elected by the Southern Division were approved, and the name of E. B. Humphreys, Alameda, proposed by Donald A. Cohen, was presented.

Mr. Kibbe then appealed to the Club to cooperate with the Audubon Association of the Pacific in urging the passage of an ordinance to license cats in the city of Berkeley. Dr. Grinnell moved that the Chair appoint a member of the Cooper Club to join with Mr. Kibbe in working out a feasible mode of procedure and to report at the next meeting. The motion was seconded and carried. Mr. Roswell S. Wheeler was appointed.

A letter from the Pacific Division of the American Association for the Advancement of Science asking that the Cooper Club hold meetings at the time of the general meeting of the Association in the spring was read and favorably acted on. Mr. Mailliard then reported for the committee which had been appointed to recommend a proper depositary for ornithological notes, photographs, etc. The committee opposed the plan of dividing materials between a northern and a southern center, and on motion of Mr. Swarth, seconded by Mr. Mailliard, the Division voted in favor of appointing the Business Manager, Mr. Chambers, custodian of all literary and other materials deposited with the Club.

Nominations for officers for the ensuing year resulted in the placing of the following names before the Club: for President, Dr. Barton W. Evermann; for Vice-President, Mr. Jules Labarthe; for Secretary, Mrs. James T. Allen.

Mr. J. R. Pemberton then gave a most interesting talk on "Field Observations on Birds of Patagonia." Adjourned.—AMELIA S. ALLEN, *Secretary.*

JANUARY.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, January 16, 1919, at eight o'clock. Dr. Evermann presided, and the following members were present: Messrs. Bryant, Carriger, Dixon, Grinnell, Hansen, Hunt, Jacobson, Kibbe, Law, Loomis, Morley, Noack, Pemberton, Ritter, Swarth and Wright; Mesdames Allen, Bamford, Bridges, Culver, Griffin, Grinnell, Kibbe, Law, Lueddemann, and Wythe. Visitors recognized were Mrs. Bryant, Mrs. Evermann and daughter, Miss Ripley, Mrs. Pemberton, Mr. Bridges, Mr. Lincoln, Mrs. Noack and son, and Mr. Babcock and son. The minutes of the preceding meeting were read and approved, and those of the December meeting of the Southern Division were read.

Mr. Humphreys was elected to membership, and the following were proposed: Professor Ivan C. Hall, Berkeley, by Dr. Grinnell; John O'Connell, San Francisco, by J. S. Hunter; and Walter Sellner, San Francisco, by J. S. Hunter.

Resolutions of condolence relating to the death of Mrs. Nace, drawn up by Dr. Joseph Grinnell, were adopted on motion of Dr. Bryant, seconded by Miss Culver.

Since Mr. Wheeler was absent, Mr. Kibbe reported for the committee appointed to investigate the possibility of introducing an ordinance requiring that cats be licensed in Berkeley. The committee began its work by gathering data from other cities where such an ordinance has been adopted.

Elections for the year 1919 resulted as follows: Dr. Barton W. Evermann, President; Mr. Jules Labarthe, Vice-president, Mrs. James T. Allen, Secretary.

Mr. Swarth then reviewed the history of the study of the Fox Sparrow, showing an interesting series of type-specimens, many of them borrowed from eastern collections.

Mr. F. C. Lincoln, Pigeon Expert of the Western Department, United States Army, then spoke on the Military Use of the Homing Pigeon, while two of the birds, removed from the carrier baskets used by the army, watched the audience from their collapsible aviary and winked knowingly as the members of the Club began to discuss the homing instinct. Adjourned.—AMELIA S. ALLEN, *Secretary.*

For Sale, Exchange and Want Column.*—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. LEE CHAMBERS, *Eagle Rock, Los Angeles County, California.

FOR SALE—One complete file of Bird-Lore, all in original covers; also many odd numbers of Bird-Lore. For sale also, one complete set, 68 parts, all in original covers, of Animate Creation.—E. W. HADELER, *Painesville, Ohio.*

WANTED—A copy of Birds of Costa Rica, by M. A. Carriker, Jr., published as Annals of Carnegie Museum, in 1910.—AUSTIN P. SMITH, *Dos Cabezas, Arizona.*

R. C. MCGREGOR, *Bureau of Science, Manila, P. I.*, wants Richmond's List of generic terms proposed for birds during the years 1890 to 1900, inclusive, etc., which was printed in *Proc. U. S. Nat. Mus.* (1902), XXIV, 663-729, and he will give one dollar for a copy, either author's separate or excerpt, and no questions asked.

EXCHANGE—I have the following publications bound in half morocco, to exchange for others not in my library: N. A. Fauna, nos. 8, 25, 28, 29, 31. What have you to offer?—W. L. BURNETT, *Colorado Agricultural College, Fort Collins, Colo.*

FOR SALE OR EXCHANGE—Almost complete files of Oologist, West American Scientist, Wilson Bulletin, etc. Wanted, Wilson Bulletin no. 94, Ridgway's Birds N. and Mid. America, vols. VII and later, Sage's Birds Connecticut, Wayne's Birds South Carolina, etc.—F. L. BURNS, *Berwyn, Pa.*

WOULD LIKE to join someone on a collecting trip this spring, either to the Channel Islands, or on main land. Could take auto at my expense.—J. FRANK WILSON, *337 Highland Place, Monrovia, Calif.*

SKULLS AND SKELETONS cleaned by a safe, up-to-date method. Send for my schedule of prices. References: California Museum of Vertebrate Zoology and California Academy of Sciences.—LULA M. BURT, *2734 Forest Ave., Berkeley, Calif.*

I WANT a complete set or odd volumes of the Proceedings of the Biological Society of Washington. Will give good exchange or cash.—W. LEE CHAMBERS, *Eagle Rock, Los Angeles County, California.*

I DESIRE good museum material with complete data. Birds, eggs, marine forms, etc. Can furnish any of the southern birds, and have a good series of ducks: Gadwall, Blue-winged Teal, etc.; also shorebirds, geese and herons. Address ALFRED M. BAILEY, *Louisiana State Museum, New Orleans, La.*

WILL EXCHANGE full sets of the following: A. O. U. nos. 52, 14, 71, 154, 157, 162, 114.1, 172a, 174. I want skins of any of the geese and swans, and of the Limicolae and Gallinae.—FRED L. GRANVILLE, *2238 Canyon Drive, Hollywood, Calif.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 P. M., third Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—MRS. AMELIA S. ALLEN, *Sec'y., 37 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 P. M., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. WYMAN, *Sec'y., care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y., ASHBY D. BOYLE, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. FRENCH GILMAN, *Banning, Calif.*